



WIRING DIAGRAMS PARTS LISTING

FOR
SERIES

HA

AUTOMATIC DEMAND CONTROLS

FOR ONAN
SERVICE ORGANIZATION
USE ONLY
(Factory...Distributor...Dealer)

ONAN

1400 25TH AVENUE N.E. • MINNEAPOLIS, MINNESOTA 55432
A DIVISION OF INgersoll Rand Corporation

WIRING DIAGRAMS/PARTS LISTING FOR HA AUTOMATIC DEMAND CONTROLS

All of the wiring diagrams apply to HA automatic demand controls and should be used for service and parts information. Before looking up any diagrams, read the description and explanations below.

HA controls use a decimal system model designation previously not used. As an example, the designation 7.5HA was formerly 705HA and 15.0HA was formerly 15HA. Because Spec B controls had both designations, use the decimal system when looking up the wiring diagrams for the 7.5 and 15 KW controls. Therefore, to find the wiring diagram for a Spec B 705HA-21 control, use the Spec B 7.5HA-21 model designation.

NOTE: The decimal system applies to all of the Spec C controls but to none of the Spec A controls.

When using the wiring diagrams, remember all components are shown in their de-energized position unless otherwise noted. To find the diagram in question, proceed to the index page shown below corresponding with the control's specification letter (last letter of model designation as shown on control nameplate).

Control Specification Letter	See Index Page
A	2
B	34
C	60

NOTE: For service and maintenance information of HA controls, see service bulletin "Control 13".

**INDEX
FOR
SPEC A CONTROLS**

Find the appropriate model and proceed to the indicated page for the wiring diagram.

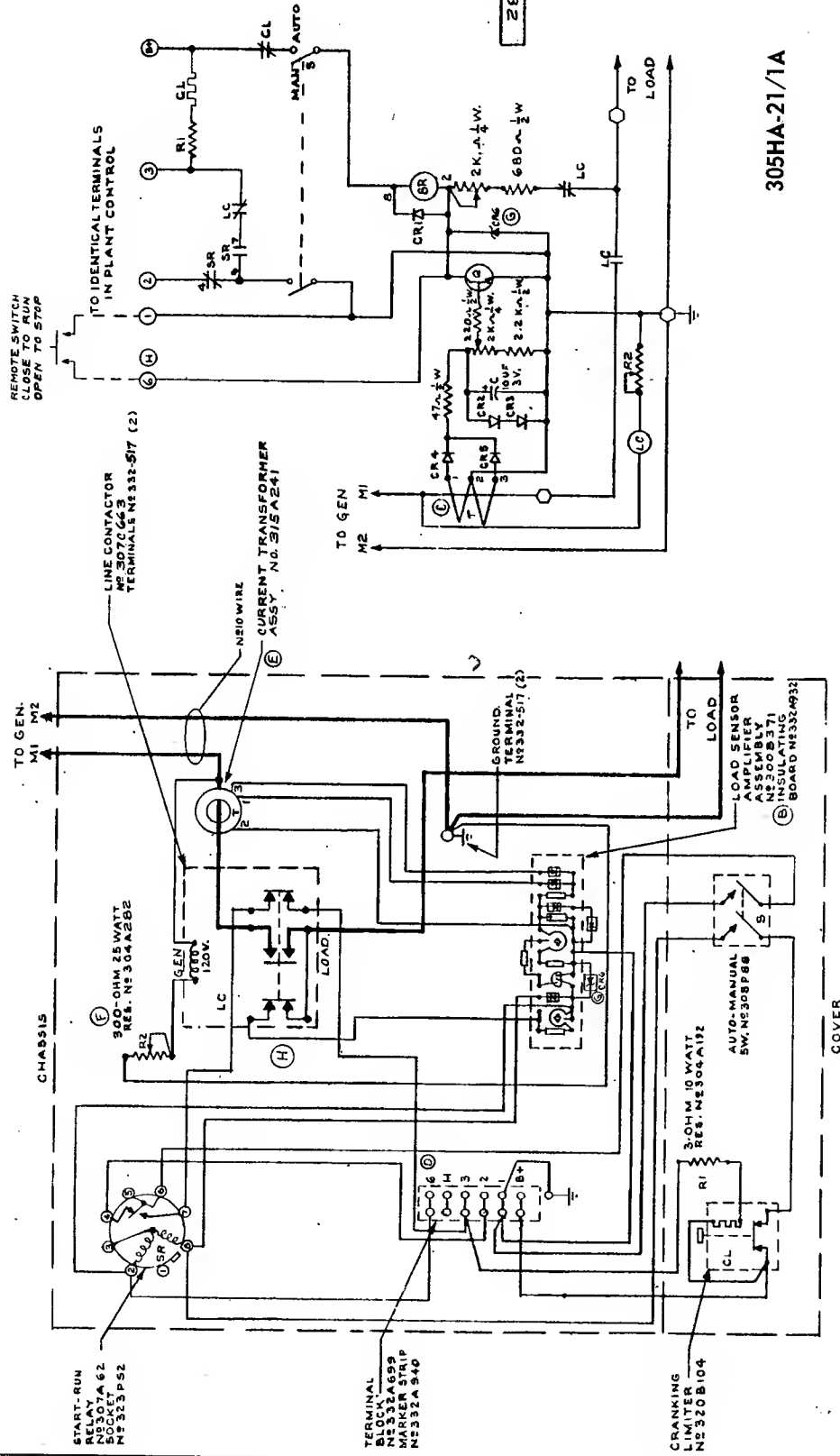
WATT RATING	MODEL	WIRING DIAGRAM	PAGE
3,500	305HA-21/1	617C82	3
	305HA-21/10	617C79	4
	305HA-21-4/1	617C89	5
	305HA-21-4/10	617C81	6
7,500	705HA-21/1	617C78	7
	705HA-21/10	617C85	8
	705HA-21/12	617C86	9
	705HA-21-3/1	617C108	10
	705HA-21-3/10	617C115	11
	705HA-21-4/1	617C80	12
	705HA-21-4/10	617C87	13
	705HA-22/1	617C83	14
	705HA-22/10	617C77	15
	705HA-22-3/10	617C109	16
	705HA-22-3/12	617C110	17
	705HA-23/1	617C73	18
	705HA-23/10	617C75	19
	705HA-23/12	617C74	20
	705HA-23-3/1	617C124	21
	705HA-23-3/10	617C122	22
	705HA-23-3/12	617C123	23
	705HA-23-4/10	617C76	24
15,000	15HA-22/10	617C71	25
	15HA-22-3/10	617C106	26
	15HA-22-3/12	617C107	27
	15HA-23-10	617C70	28
	15HA-23/12	617C69	29
	15HA-23-3/1	617C121	30
	15HA-23-3/10	617C119	31
	15HA-23-3/12	617C120	32
	15HA-23-4/10	617C72	33

617C82

PICTORIAL

SCHEMATIC

305HA-21/1A



NOTE:
WIRES TO LOAD SENSOR AMPLIFIER N220
OTHER WIRES N220 OR LARGER.

305HA-21/1A

H	WIRE CORR.	CORRECTED	BY	DATE
G	ADDED CR6		JY	4-7-66
F	WAS NO. 304A8		JY	2-17-66
E	ADDED TERMINAL 4		JY	1-17-66
D	ADDED TERMINAL 4		JY	1-17-66
C	MOVED FROM GEN. SIDE		JY	1-17-66
B	WAS N2332A707		JY	6-4-65
A	WAS N2332A707		JY	6-4-65
1	WAS N2332A707		JY	6-4-65

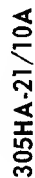
REVISION
BY
DATE

ORIGIN
DIVISION OF INSTRUMENT CORPORATION
BOSTON, MASSACHUSETTS


MODEL	DATE	BY	DATE
305HA-21/1A	5-6-65	JY	4-7-66
20 VOLT 1PH.			
2 WIRE 50-60W			
12 V. CRANKING			

617 C82

SCHEMATIC



NOTE:
WIRES TO LOAD SENSOR AMPLIFIER N°20
OTHER WIRES N°20 OR LARGER.

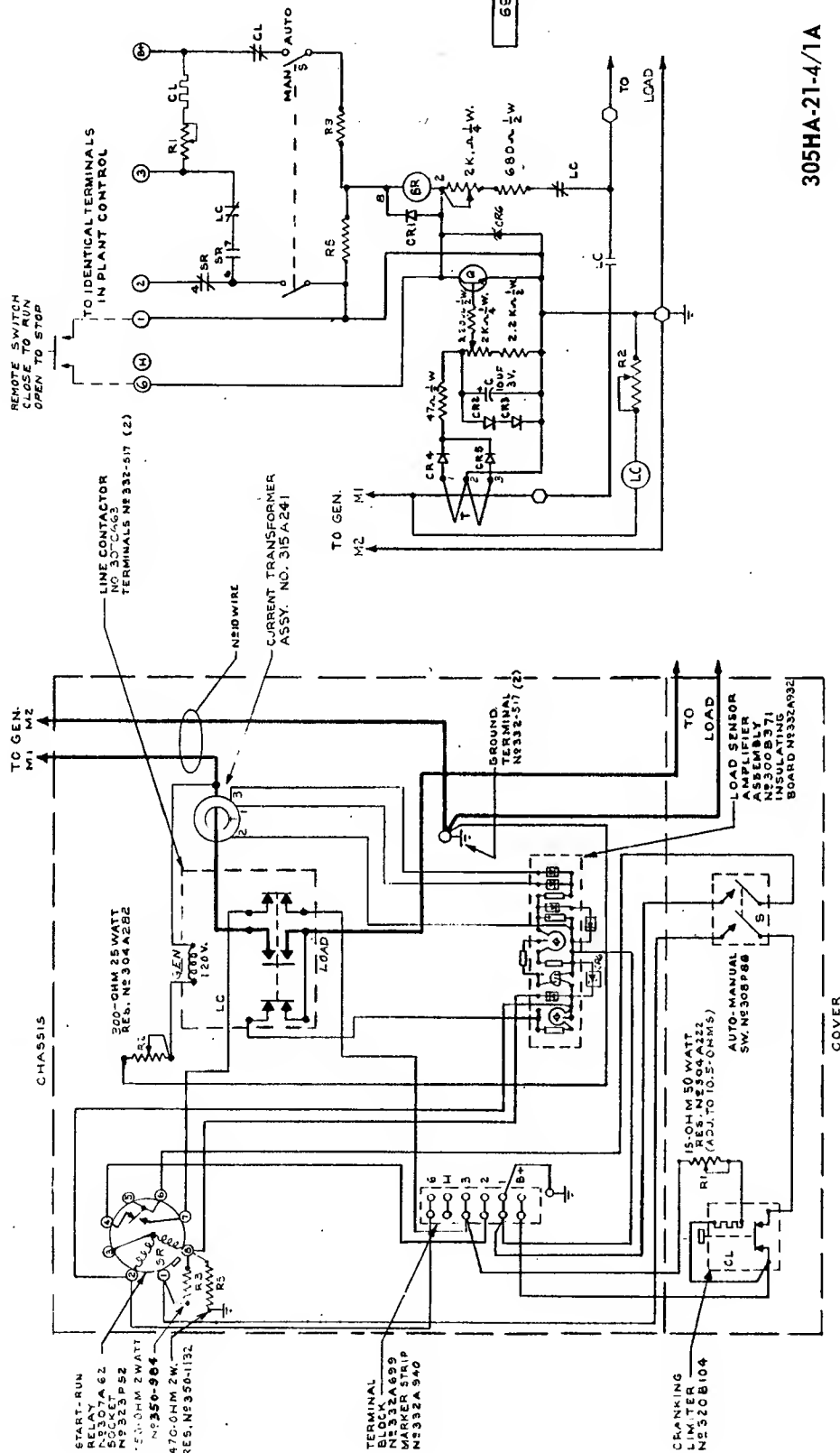
		DIVISION OF FOREIGN CORRUPTION	
DATE	FILE	DATE	FILE
8-16-65	CKH	7-17-68	WJB
AUTOMATIC DEMAND		AUTOMATIC DEMAND	
CONTROL WIRING DIAGRAM		CONTROL WIRING DIAGRAM	
617 C 79		617 C 79	

617 C 89

PICTORIAL

SCHEMATIC

305 HA-21-4/1A

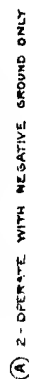


NOTE:
1- WIRES TO LOAD SENSOR AMPLIFIER N320
OTHER WIRES N320 OR LARGER.

(A) 2- OPERATE WITH NEGATIVE GROUND ONLY

305HA-21-4/1A

ADDED NOTE 2		7/9-66	DATE
REV	BY	DATE	DATE
DIVISION OF STEAMSHIP CORPORATION			
MODEL			
305HA-21-4/1A			
NAME AUTOMATIC DEMAND			
22 VOLT 1P.H.			
2 WIRE 50-60 ~			
32 V. CRANKING			
617 C 89			



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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PICTORIAL

CHASSIS

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

150 OHM 25 WATT RES. M230A45

GEN. 120V

LC

TO LOAD

CURRENT TRANS. M230A233
INSTRUCTION 749
NO. 58A1825

TERMINAL BLOCK M230A62
M230A62
M230A62
M230A62

CRANKING LIMITER M230B104

20 OHM 10 WATT RES. M230A132

AUTO-MANUAL SW. M230B104

LOAD SENSOR AMPLIFIER ASSEMBLY M230A132

INSULATING BOARD M230A132

TO LOAD

COVER

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

TO LOAD

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

TO LOAD

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

TO LOAD

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

SCHEMATIC

TO IDENTICAL TERMINALS IN PLANT CONTROL

LINE CONTACTOR M230C665

STRAP M230A142 (2)

TERMINALS M230A142 (2)

JUMPER M230A142 (2)

TO REMOTE START-RUN SWITCH

TO LOAD

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

TO LOAD

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

TO LOAD

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

TO LOAD

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

TO LOAD

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

TO LOAD

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

TO LOAD

TO GEN. M1 OR T174

TO GEN. M2 OR T2, T4

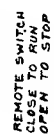
TO LOAD

TO GEN. M1 OR T174

NOTE:
WIRE TO LOAD SENSOR AMPLIFIER M230A132
OTHER WIRES NEED BE LARGER.

705HA-21/1A

705HA-21/1A		AUTOMATIC DEMAND	
120 VOLT		CONTROL WIRING DIAGRAM	
1 PH, 2 WIRE 50-60 Hz		617 C 78	
12 V CRANKING			



REMOTE SWITCH
CLOSE TO RUN
OPEN TO STOP

LINE CONTACTOR
Nº 307C66#
TERMINALS Nº 332-142 (2)
JUMPER Nº 307A68#

PRE-HEAT
TIME DELAY
RELAY(20 SEC.)
Nº 307A645 -
SOCKET
Nº 323P52

TERMINAL
BLOCK
Nº 332A699
MARKER STRIP
Nº 332A 940

CRAWLING
LIMITER
Nº 320B104

AUTO-
SW. N

AUTO-MANUAL
SW 19308000

LOAD 5

LOAD	LOAD SENSOR
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
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99	99
100	100

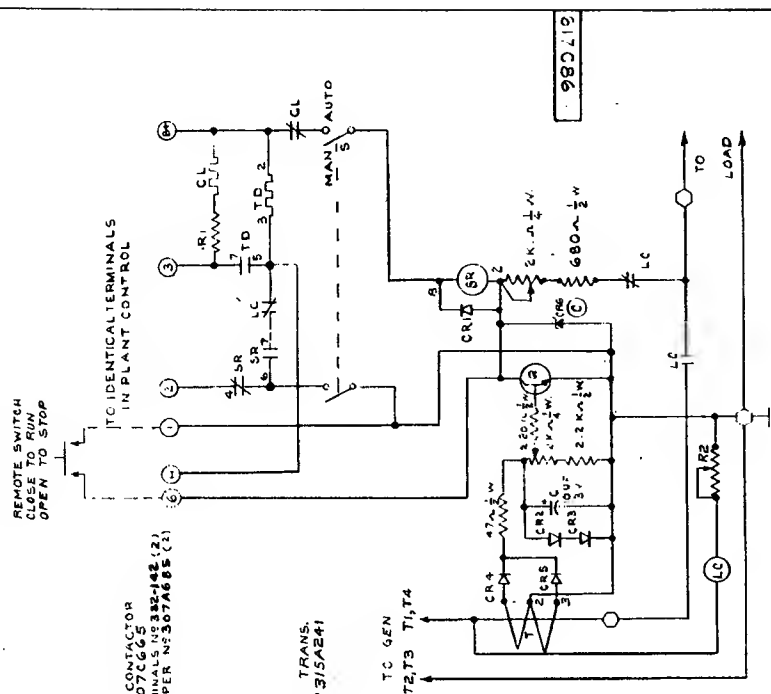
AD
SOR

705HA-21/10A

NOTE:
WIRES TO LOAD SENSOR AMPLIFIER N°20
OTHER WIRES N°20 OR LARGER

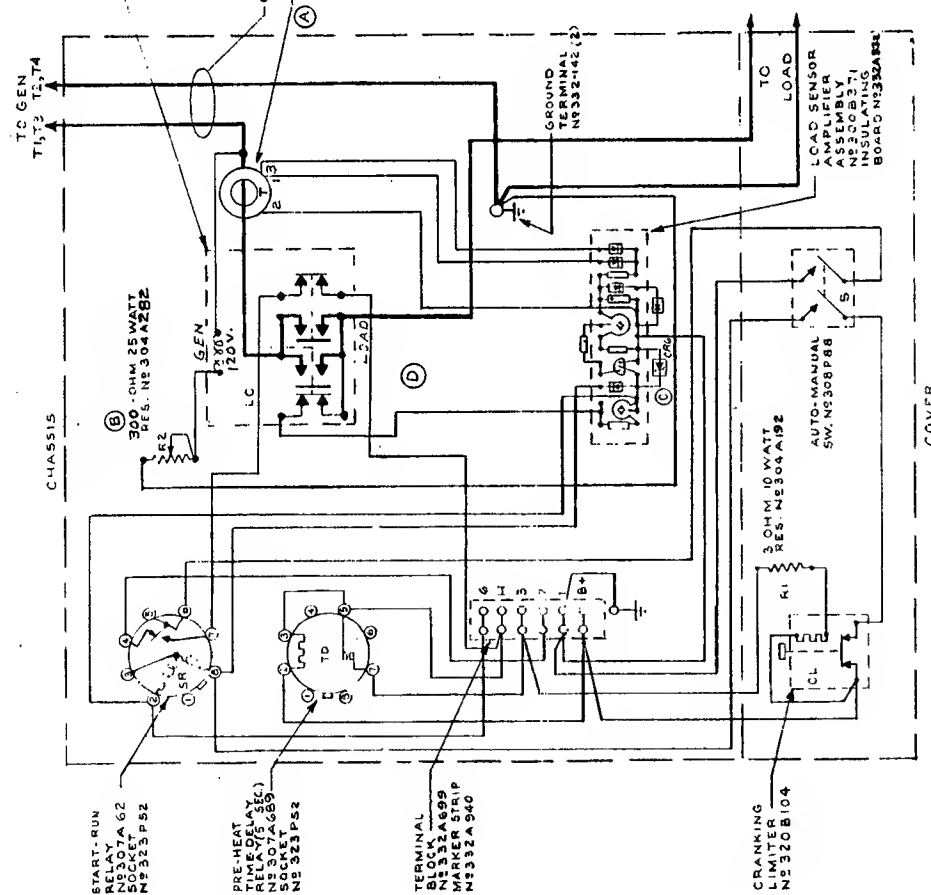
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SCHEMATIC



705HA-21/12A

PICTORIAL



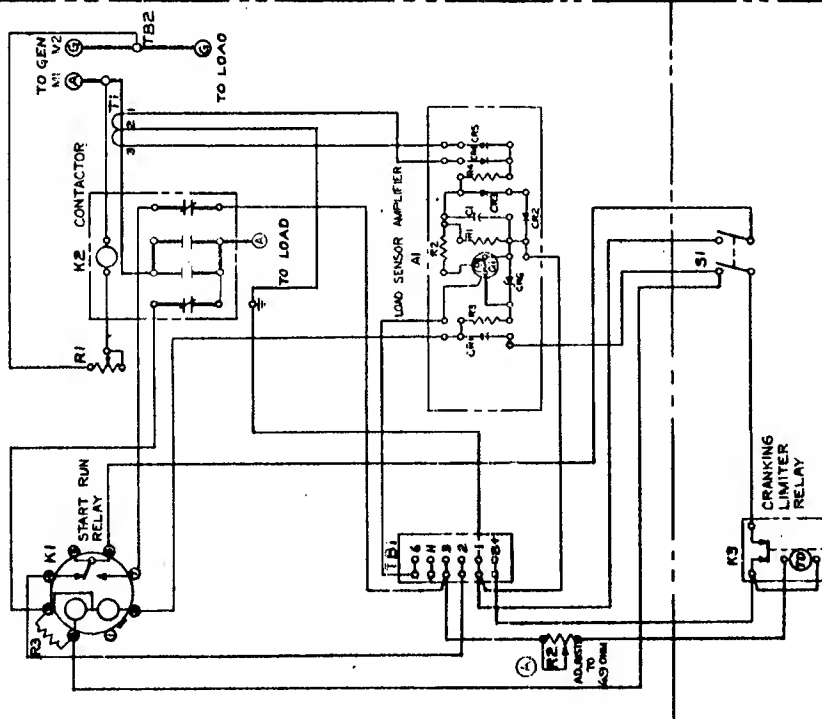
NOTE:
WIRES TO LOAD SENSOR AMPLIFIER N° 20
OTHER WIRES N° 20 OR LARGER

D	WIRE CONNECTIONS	RECEIVED	1957-68
E	WIRE NO.	50 A/E	1957-68
F	WIRE NO.	50 A/E	1957-68
G	WIRE NO.	50 A/E	1957-68
H	WIRE NO.	50 A/E	1957-68
I	WIRE NO.	50 A/E	1957-68
J	WIRE NO.	50 A/E	1957-68
K	WIRE NO.	50 A/E	1957-68
L	WIRE NO.	50 A/E	1957-68
M	WIRE NO.	50 A/E	1957-68
N	WIRE NO.	50 A/E	1957-68
O	WIRE NO.	50 A/E	1957-68
P	WIRE NO.	50 A/E	1957-68
Q	WIRE NO.	50 A/E	1957-68
R	WIRE NO.	50 A/E	1957-68
S	WIRE NO.	50 A/E	1957-68
T	WIRE NO.	50 A/E	1957-68
U	WIRE NO.	50 A/E	1957-68
V	WIRE NO.	50 A/E	1957-68
W	WIRE NO.	50 A/E	1957-68
X	WIRE NO.	50 A/E	1957-68
Y	WIRE NO.	50 A/E	1957-68
Z	WIRE NO.	50 A/E	1957-68

617C108

WIRING DIAGRAM

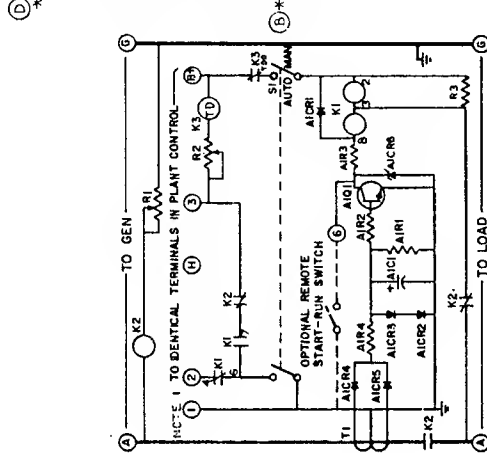
FRONT VIEW OF CHASSIS



NOTES:

1. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
2. CAUTION - IF GEN IS CONNECTED TO LOAD, TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

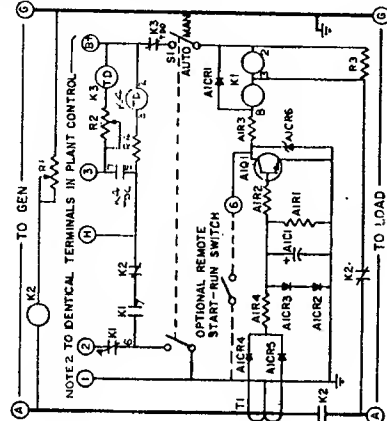
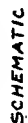
SCHEMATIC



705HA-21-3/1A

REFDES	PART NO	QTY	DESCRIPTION
A1	300B482	1	AMPLIFIER ASSY-LOAD SENSOR
K1	302A932	1	BOARD-INSULATING
K2	307A62	1	RELAY-START RUN
K3	307A62	1	RELAY-START RUN
R1	307A62	1	RELAY-START RUN
R2	307A62	1	RELAY-START RUN
R3	307A62	1	RELAY-START RUN
T1	307A62	1	RELAY-START RUN
T2	307A62	1	RELAY-START RUN
T3	307A62	1	RELAY-START RUN
T4	307A62	1	RELAY-START RUN
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T96	307A62	1	RELAY-START RUN
T97	307A62	1	RELAY-START RUN
T98	307A62	1	RELAY-START RUN
T99	307A62	1	RELAY-START RUN
T100	307A62	1	RELAY-START RUN

E	ADDED WIRE NO. 1847, 1842, 1841, 1840, 1839, 1838, 1837, 1836, 1835, 1834, 1833, 1832, 1831, 1830, 1829, 1828, 1827, 1826, 1825, 1824, 1823, 1822, 1821, 1820, 1819, 1818, 1817, 1816, 1815, 1814, 1813, 1812, 1811, 1810, 1809, 1808, 1807, 1806, 1805, 1804, 1803, 1802, 1801, 1800, 1799, 1798, 1797, 1796, 1795, 1794, 1793, 1792, 1791, 1790, 1789, 1788, 1787, 1786, 1785, 1784, 1783, 1782, 1781, 1780, 1779, 1778, 1777, 1776, 1775, 1774, 1773, 1772, 1771, 1770, 1769, 1768, 1767, 1766, 1765, 1764, 1763, 1762, 1761, 1760, 1759, 1758, 1757, 1756, 1755, 1754, 1753, 1752, 1751, 1750, 1749, 1748, 1747, 1746, 1745, 1744, 1743, 1742, 1741, 1740, 1739, 1738, 1737, 1736, 1735, 1734, 1733, 1732, 1731, 1730, 1729, 1728, 1727, 1726, 1725, 1724, 1723, 1722, 1721, 1720, 1719, 1718, 1717, 1716, 1715, 1714, 1713, 1712, 1711, 1710, 1709, 1708, 1707, 1706, 1705, 1704, 1703, 1702, 1701, 1700, 1699, 1698, 1697, 1696, 1695, 1694, 1693, 1692, 1691, 1690, 1689, 1688, 1687, 1686, 1685, 1684, 1683, 1682, 1681, 1680, 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618, 617, 616, 615, 614, 613, 612, 611, 610, 609, 608, 607, 606, 605, 604, 603, 602, 601, 600, 599,
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REFDES	PART NO.	QTY	PARTS LIST	DESCRIPTION
A1	300B462	1	AMPLIFIER ASSY-LOAD SENSOR	
	322A932	1	BOARD-INSULATING	
K1	307A49	1	RELAY-START RUN	
	323P151	1	SOCKET	
K2	307G665	1	CONTACTOR	
	332-112	2	TERMINAL	
	307AGE3	2	JUMPER	
K3	320B144	1	RELAY-CRANKING LIMITER	
K4	307A645	1	RELAY-TIME DELAY STARTING (2S)	
	323P360	1	SOCKET	
R1	307A252	1	RESISTOR, 300-OHM, 25W	
R2	304A66	1	RESISTOR, 10-OHM, 50 W	
S1	308PBB	1	SWITCH-AUTO MANUAL	
T1	315A241	1	TRANS. ASSY-CURRENT	
TB1	332A639	1	BLOCK-TERMINAL	
	38A1927	1	SILK SCREEN	
TB2	332-142	2	TERMINAL-GROUND	
R3	304A231	1	RESISTOR, 10-OHM, 25 W	
R4	352-114	1	RESISTOR, 62-OHM, 2W	
	301D2573	1	CONTROL BOX	
	98C1815	1	SILK SCREEN	
	98A1957	1	SILK SCREEN	
	301B2586	1	TRIM	
	518P237	3	FASTER-TRIM	
	R15-178	1	SCREW-HEX, NO. 10-32X.34LG	
	850-30	1	LOCKWASHER #10	
	99A966	1	NAMEPLATE-CONTROL	
	98A2045	1	LABEL, CAUTION	
	334A1690	25PI	WIRE-FLEXIBLE NO. 20 AWG	
	334A1842	12PI	WIRE-FLEXIBLE NO. 16 AWG	
				51121212

705HA-21-3/10A

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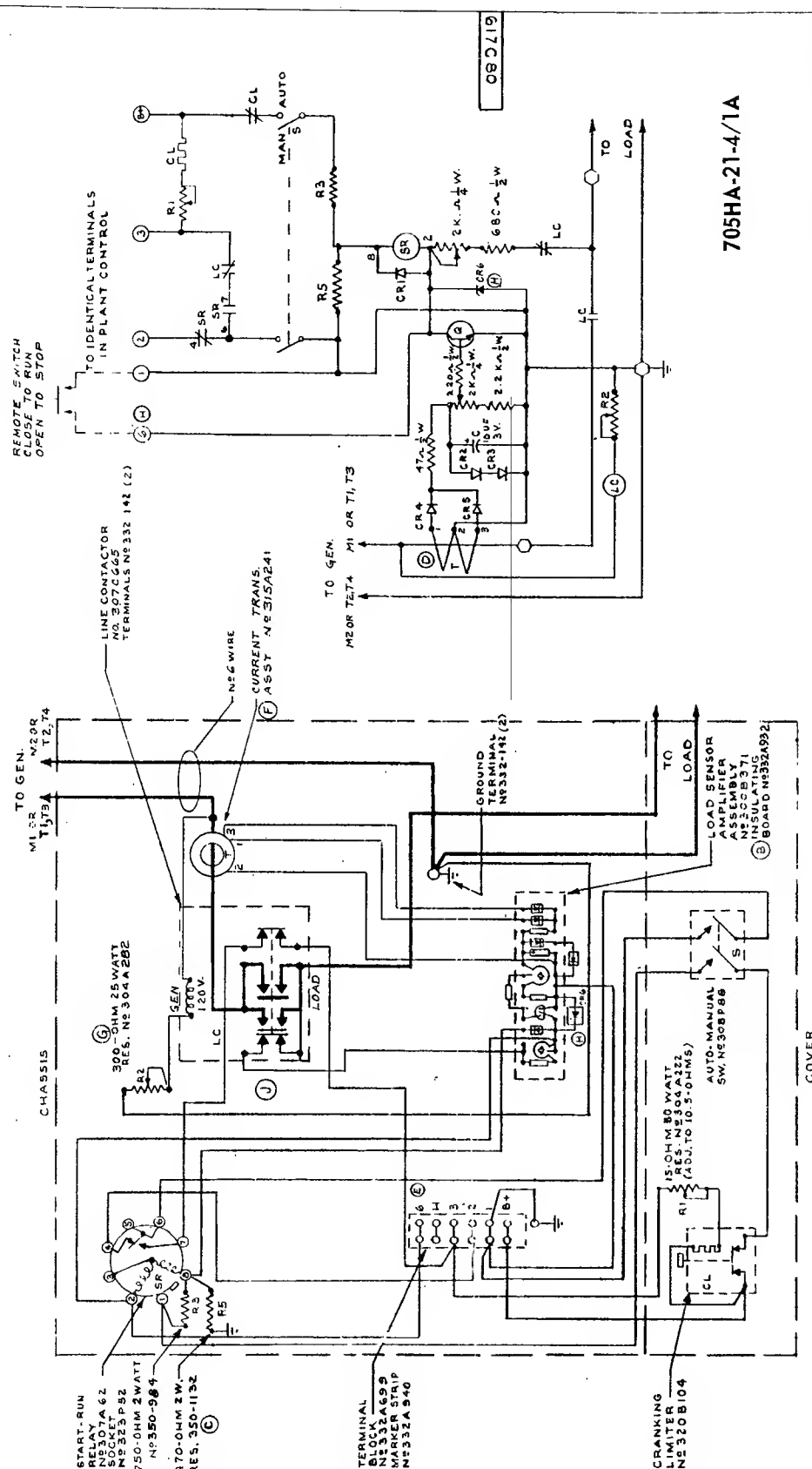
- NOTES:
1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2). THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
4. MOUNT SWITCH WITH FINISHING NUT ON THE FRONT PANEL.

617C80

PICTORIAL

SCHEMATIC

705HA-21-4/1A

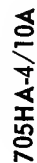


NOTE:
1- WIRES TO LOAD SENSOR AMPLIFIER N320
OTHER WIRES N320 OR LARGER.


2- OPERATE WITH NEGATIVE GROUND

705HA-21-4/1A

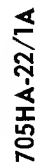
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79	WIRE CHANGED	2-28-6




⑥ 2- OPERATE WITH NEGATIVE GROUND ONLY


 DIVISION OF STUDYBAKES CORPORATION
 REVISION _____ DATE _____

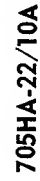
DATE	MODEL	TEST
11-20-65	705HA-21-4/10A	TV
AUTOMATIC DEMAND		
CONTROL WIRING DIAGRAM		
120 VOLT 1 PH.	2 WIRE 50-60 ~	
32 V. CRANKING		617 C87




NOTE:
WIRES TO LOAD SENSOR AMPLIFIER №20
OTHER WIRES №20 OR LARGER

DATE	5-5-65	BY	WJB	CHK	WJB
<div style="display: flex; justify-content: space-between;"> <div>  <div> <div>Logan</div> <div> DIVISION OF INVESTIGATOR CORPORATION Registered - Michigan </div> </div> </div> <div> AUTOMATIC DEMAND CONTROL WIRING DIAGRAM </div> </div>					
NO	617 C83				

MODEL	TOSH-22/1A
	240VOLT 1PH.
	2 WIRE 50-60~
	120V GRNDING



5	WIRE CONNECTIONS CORRECTED	TV 6-25-66
F	ADDED CR	TV 4-7-66
E	MOVED T.E WAS NO.35A233	TV 2-7-66
D	ADDED T.E. FROM NAL	TV 1-1-65
C	MOVED T.E. FROM GEN SIDE	TV 4-1-65
B	WAS 332 A107	TV 4-3-65
A	WAS BOX ASSY 30782588	TV 4-3-65
UNIT	REVISION	CR DATE



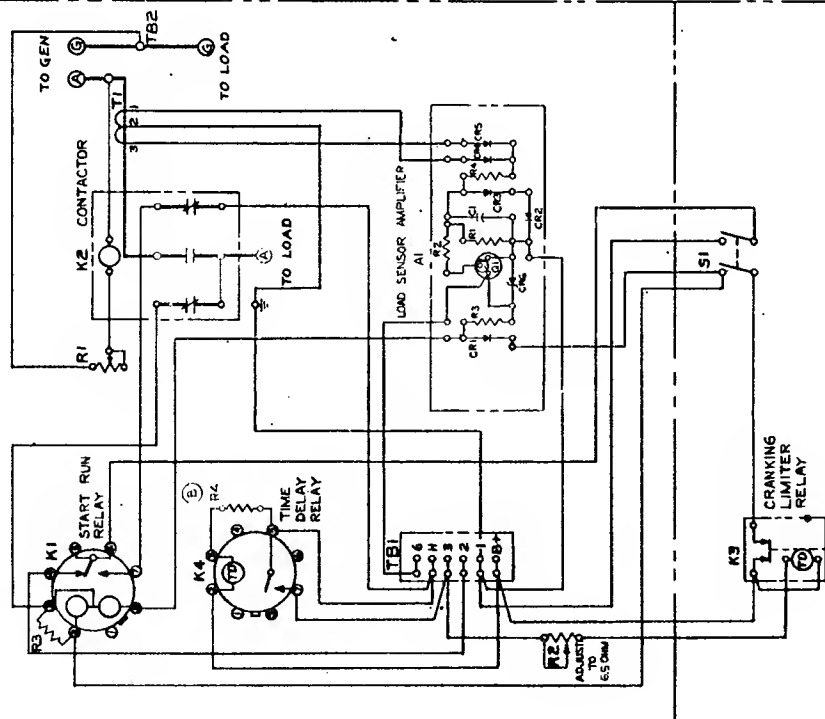
DIVISION OF STYLERISE CORPORATION
NEW YORK, N.Y.

MODEL	DATE	BY	CHK	DATE	BY	CHK
705HA-22/10A	4-15-65			4-15-65		
240VOLT 1PH.	AUTOMATIC DEMAND					
2 WIRE 50-60 ~	CONTROL WIRING DIAGRAM					
12 V. CRANKING	DRAWING NO. 617 C 77					

617C109

WIRING DIAGRAM

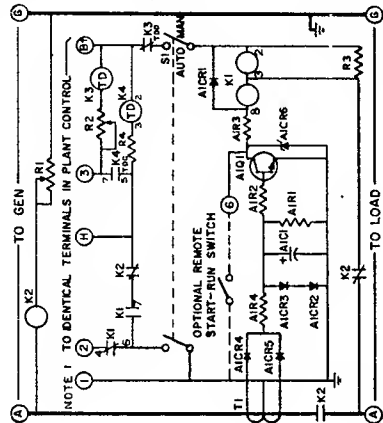
FRONT VIEW OF CHASSIS



NOTES:

1. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
2. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

SCHEMATIC



REF DES	PART NO	QTY	DESCRIPTION
A1	300B482	1	AMPLIFIER ASSY-LOAD SENSOR
N1	324A932	1	BOARD-INSULATING
N1	324A932	1	RELAY-START RUN
K2	307C654	1	CONTACTOR
K3	307C654	1	CRANKING LIMITER
K4	307A145	1	RELAY-TIME DELAY, START-STOP
R1	304A151	1	RESISTOR 750-0HM 25W
R2	304A666	1	RESISTOR 10-0HM 1/2W
R3	304A666	1	RESISTOR 10-0HM 1/2W
R4	304A666	1	RESISTOR 10-0HM 1/2W
R5	304A666	1	RESISTOR 10-0HM 1/2W
R6	304A666	1	RESISTOR 10-0HM 1/2W
R7	304A666	1	RESISTOR 10-0HM 1/2W
R8	304A666	1	RESISTOR 10-0HM 1/2W
R9	304A666	1	RESISTOR 10-0HM 1/2W
R10	304A666	1	RESISTOR 10-0HM 1/2W
R11	304A666	1	RESISTOR 10-0HM 1/2W
R12	304A666	1	RESISTOR 10-0HM 1/2W
R13	304A666	1	RESISTOR 10-0HM 1/2W
R14	304A666	1	RESISTOR 10-0HM 1/2W
R15	304A666	1	RESISTOR 10-0HM 1/2W
R16	304A666	1	RESISTOR 10-0HM 1/2W
R17	304A666	1	RESISTOR 10-0HM 1/2W
R18	304A666	1	RESISTOR 10-0HM 1/2W
R19	304A666	1	RESISTOR 10-0HM 1/2W
R20	304A666	1	RESISTOR 10-0HM 1/2W
R21	304A666	1	RESISTOR 10-0HM 1/2W
R22	304A666	1	RESISTOR 10-0HM 1/2W
R23	304A666	1	RESISTOR 10-0HM 1/2W
R24	304A666	1	RESISTOR 10-0HM 1/2W
R25	304A666	1	RESISTOR 10-0HM 1/2W
R26	304A666	1	RESISTOR 10-0HM 1/2W
R27	304A666	1	RESISTOR 10-0HM 1/2W
R28	304A666	1	RESISTOR 10-0HM 1/2W
R29	304A666	1	RESISTOR 10-0HM 1/2W
R30	304A666	1	RESISTOR 10-0HM 1/2W
R31	304A666	1	RESISTOR 10-0HM 1/2W
R32	304A666	1	RESISTOR 10-0HM 1/2W
R33	304A666	1	RESISTOR 10-0HM 1/2W
R34	304A666	1	RESISTOR 10-0HM 1/2W
R35	304A666	1	RESISTOR 10-0HM 1/2W
R36	304A666	1	RESISTOR 10-0HM 1/2W
R37	304A666	1	RESISTOR 10-0HM 1/2W
R38	304A666	1	RESISTOR 10-0HM 1/2W
R39	304A666	1	RESISTOR 10-0HM 1/2W
R40	304A666	1	RESISTOR 10-0HM 1/2W
R41	304A666	1	RESISTOR 10-0HM 1/2W
R42	304A666	1	RESISTOR 10-0HM 1/2W
R43	304A666	1	RESISTOR 10-0HM 1/2W
R44	304A666	1	RESISTOR 10-0HM 1/2W
R45	304A666	1	RESISTOR 10-0HM 1/2W
R46	304A666	1	RESISTOR 10-0HM 1/2W
R47	304A666	1	RESISTOR 10-0HM 1/2W
R48	304A666	1	RESISTOR 10-0HM 1/2W
R49	304A666	1	RESISTOR 10-0HM 1/2W
R50	304A666	1	RESISTOR 10-0HM 1/2W
R51	304A666	1	RESISTOR 10-0HM 1/2W
R52	304A666	1	RESISTOR 10-0HM 1/2W
R53	304A666	1	RESISTOR 10-0HM 1/2W
R54	304A666	1	RESISTOR 10-0HM 1/2W
R55	304A666	1	RESISTOR 10-0HM 1/2W
R56	304A666	1	RESISTOR 10-0HM 1/2W
R57	304A666	1	RESISTOR 10-0HM 1/2W
R58	304A666	1	RESISTOR 10-0HM 1/2W
R59	304A666	1	RESISTOR 10-0HM 1/2W
R60	304A666	1	RESISTOR 10-0HM 1/2W
R61	304A666	1	RESISTOR 10-0HM 1/2W
R62	304A666	1	RESISTOR 10-0HM 1/2W
R63	304A666	1	RESISTOR 10-0HM 1/2W
R64	304A666	1	RESISTOR 10-0HM 1/2W
R65	304A666	1	RESISTOR 10-0HM 1/2W
R66	304A666	1	RESISTOR 10-0HM 1/2W
R67	304A666	1	RESISTOR 10-0HM 1/2W
R68	304A666	1	RESISTOR 10-0HM 1/2W
R69	304A666	1	RESISTOR 10-0HM 1/2W
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R71	304A666	1	RESISTOR 10-0HM 1/2W
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R73	304A666	1	RESISTOR 10-0HM 1/2W
R74	304A666	1	RESISTOR 10-0HM 1/2W
R75	304A666	1	RESISTOR 10-0HM 1/2W
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R77	304A666	1	RESISTOR 10-0HM 1/2W
R78	304A666	1	RESISTOR 10-0HM 1/2W
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R80	304A666	1	RESISTOR 10-0HM 1/2W
R81	304A666	1	RESISTOR 10-0HM 1/2W
R82	304A666	1	RESISTOR 10-0HM 1/2W
R83	304A666	1	RESISTOR 10-0HM 1/2W
R84	304A666	1	RESISTOR 10-0HM 1/2W
R85	304A666	1	RESISTOR 10-0HM 1/2W
R86	304A666	1	RESISTOR 10-0HM 1/2W
R87	304A666	1	RESISTOR 10-0HM 1/2W
R88	304A666	1	RESISTOR 10-0HM 1/2W
R89	304A666	1	RESISTOR 10-0HM 1/2W
R90	304A666	1	RESISTOR 10-0HM 1/2W
R91	304A666	1	RESISTOR 10-0HM 1/2W
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R93	304A666	1	RESISTOR 10-0HM 1/2W
R94	304A666	1	RESISTOR 10-0HM 1/2W
R95	304A666	1	RESISTOR 10-0HM 1/2W
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R97	304A666	1	RESISTOR 10-0HM 1/2W
R98	304A666	1	RESISTOR 10-0HM 1/2W
R99	304A666	1	RESISTOR 10-0HM 1/2W
R100	304A666	1	RESISTOR 10-0HM 1/2W

705HA-22-3/10A

1	300B482	1	AMPLIFIER ASSY-LOAD SENSOR
2	324A932	1	BOARD-INSULATING
3	324A932	1	RELAY-START RUN
4	307C654	1	CONTACTOR
5	307C654	1	CRANKING LIMITER
6	307A145	1	RELAY-TIME DELAY, START-STOP
7	304A151	1	RESISTOR 750-0HM 25W
8	304A666	1	RESISTOR 10-0HM 1/2W
9	304A666	1	RESISTOR 10-0HM 1/2W
10	304A666	1	RESISTOR 10-0HM 1/2W
11	304A666	1	RESISTOR 10-0HM 1/2W
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41	304A666	1	RESISTOR 10-0HM 1/2W
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100	304A666	1	RESISTOR 10-0HM 1/2W

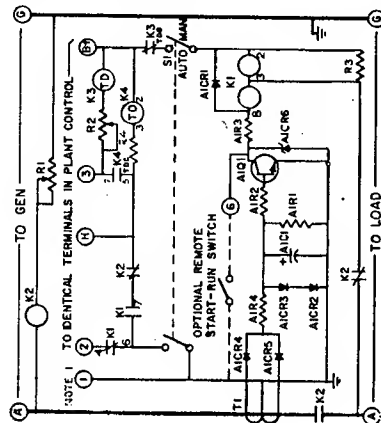
705HA-22-3/10A	24 VOLT CRANKING	240 V, 1 PH.	2 W, 50/60 Hz
SCHEMATIC & WIRING DIAGRAM			
AUTOMATIC DEMAND CONTROL			
617C109			

FRONT VIEW OF CHASSIS



- F. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN., BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
- G. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (X2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

PARTIS LIST



705HA-22-3/12A

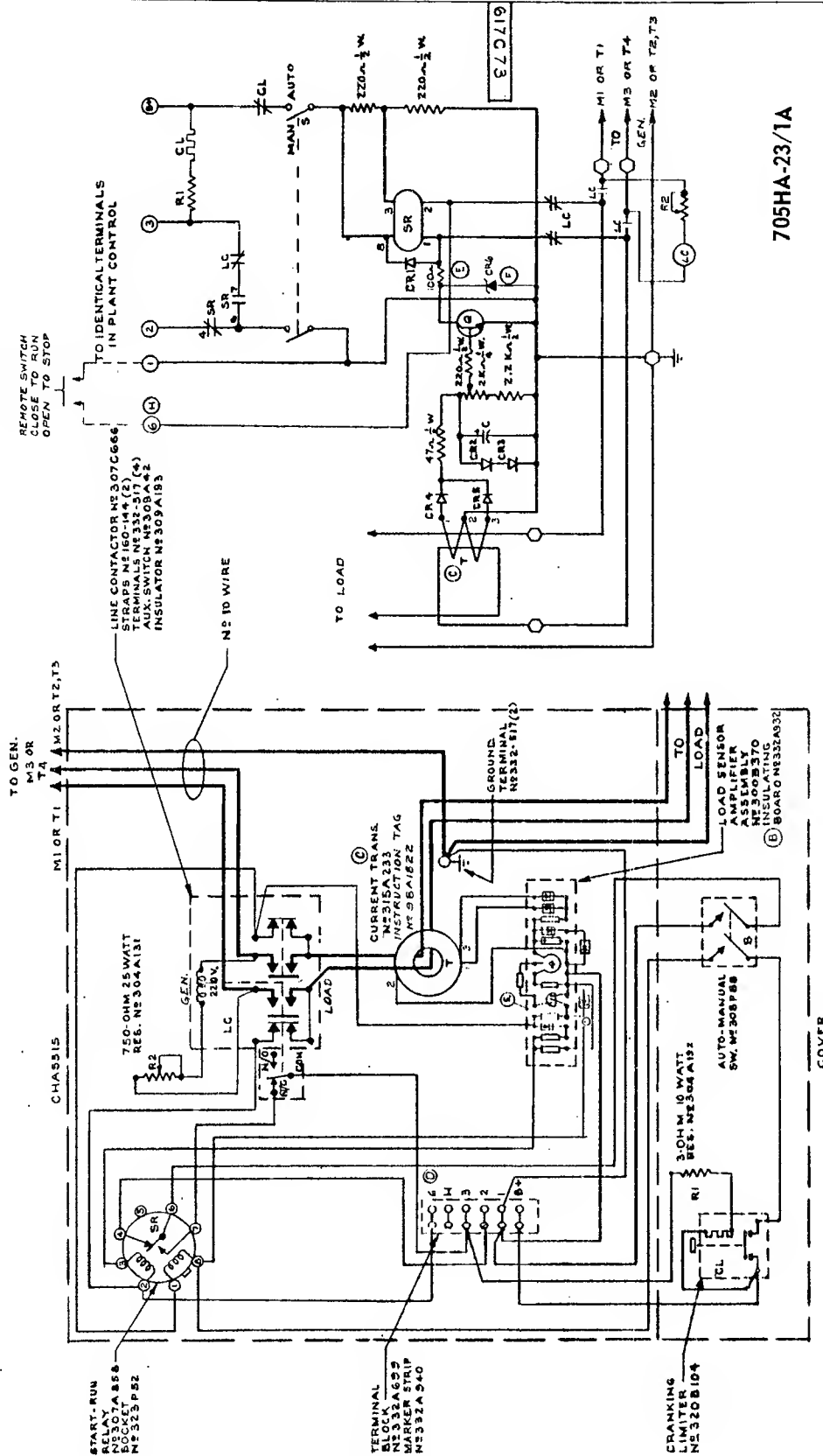
[illegible]

617C73

PICTORIAL

SCHEMATIC

75HA-23/1A



705HA-23/1A

NOTE:
1- WIRES TO LOAD SENSOR AMPLIFIER N°20
OTHER WIRES N°20 OR LARGER.

(C) 2- OPERATE WITH NEGATIVE GROUND ONLY

REVISION	DATE	BY	CHK
1	7-15-65	WJW	WJW
2	7-15-65	WJW	WJW
3	7-15-65	WJW	WJW
4	7-15-65	WJW	WJW
5	7-15-65	WJW	WJW
6	7-15-65	WJW	WJW
7	7-15-65	WJW	WJW
8	7-15-65	WJW	WJW
9	7-15-65	WJW	WJW
10	7-15-65	WJW	WJW

MODEL	DATE	BY	CHK
75HA-23/1A	7-15-65	WJW	WJW
120-240 VOLT			
1PH. 3 WIRE 50-60~			
12 V. CRANKING			

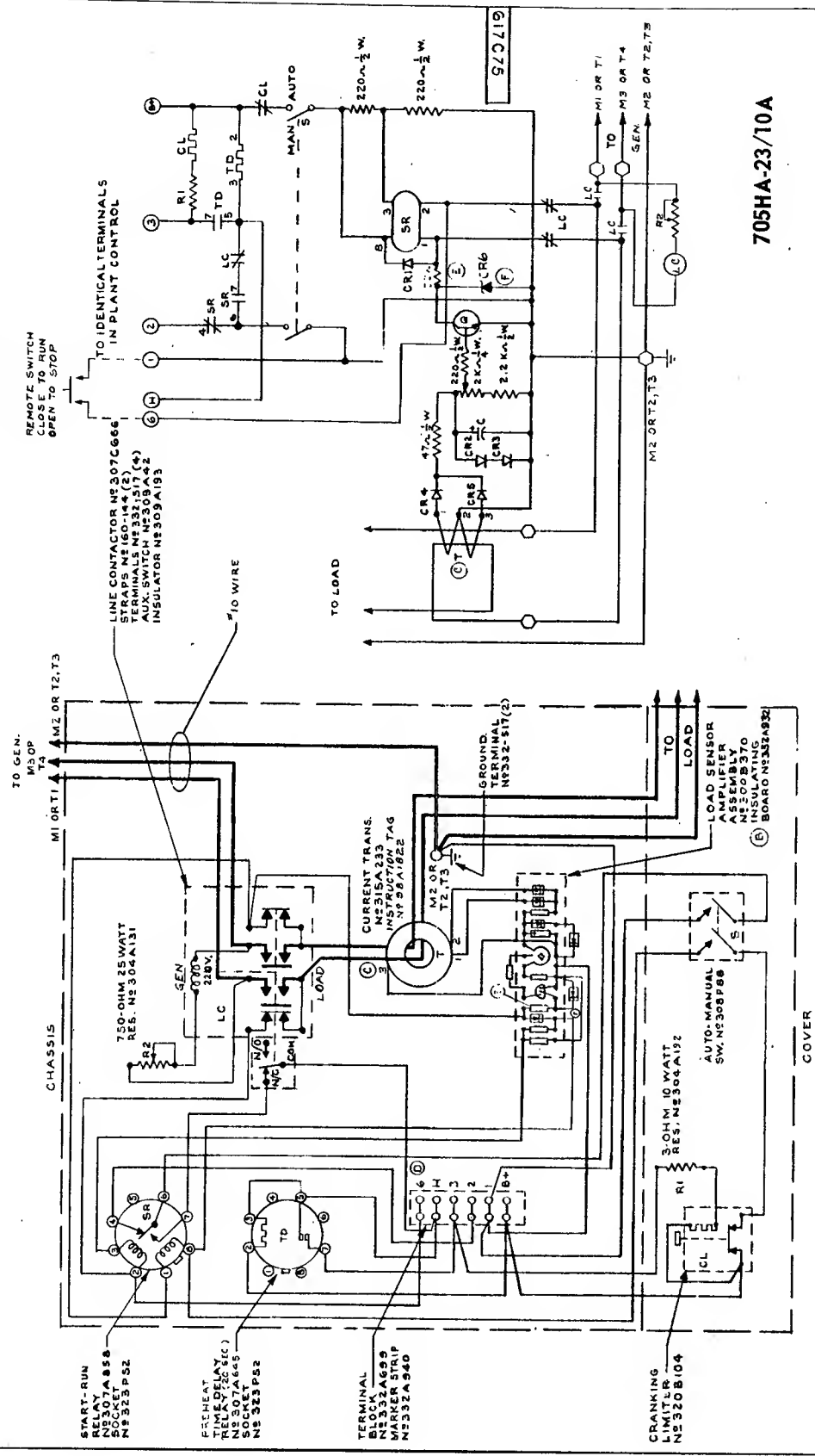
617 C 7 3

617C75

PICTORIAL

SCHEMATIC

705HA-23/10A



REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	10-1-65	WJ	INITIAL DESIGN
2	10-1-65	WJ	REVISED FROM GEN SIDE
3	10-1-65	WJ	REVISED FROM GEN SIDE
4	10-1-65	WJ	REVISED FROM GEN SIDE
5	10-1-65	WJ	REVISED FROM GEN SIDE
6	10-1-65	WJ	REVISED FROM GEN SIDE
7	10-1-65	WJ	REVISED FROM GEN SIDE
8	10-1-65	WJ	REVISED FROM GEN SIDE
9	10-1-65	WJ	REVISED FROM GEN SIDE
10	10-1-65	WJ	REVISED FROM GEN SIDE

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	10-1-65	WJ	INITIAL DESIGN
2	10-1-65	WJ	REVISED FROM GEN SIDE
3	10-1-65	WJ	REVISED FROM GEN SIDE
4	10-1-65	WJ	REVISED FROM GEN SIDE
5	10-1-65	WJ	REVISED FROM GEN SIDE
6	10-1-65	WJ	REVISED FROM GEN SIDE
7	10-1-65	WJ	REVISED FROM GEN SIDE
8	10-1-65	WJ	REVISED FROM GEN SIDE
9	10-1-65	WJ	REVISED FROM GEN SIDE
10	10-1-65	WJ	REVISED FROM GEN SIDE

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	10-1-65	WJ	INITIAL DESIGN
2	10-1-65	WJ	REVISED FROM GEN SIDE
3	10-1-65	WJ	REVISED FROM GEN SIDE
4	10-1-65	WJ	REVISED FROM GEN SIDE
5	10-1-65	WJ	REVISED FROM GEN SIDE
6	10-1-65	WJ	REVISED FROM GEN SIDE
7	10-1-65	WJ	REVISED FROM GEN SIDE
8	10-1-65	WJ	REVISED FROM GEN SIDE
9	10-1-65	WJ	REVISED FROM GEN SIDE
10	10-1-65	WJ	REVISED FROM GEN SIDE

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	10-1-65	WJ	INITIAL DESIGN
2	10-1-65	WJ	REVISED FROM GEN SIDE
3	10-1-65	WJ	REVISED FROM GEN SIDE
4	10-1-65	WJ	REVISED FROM GEN SIDE
5	10-1-65	WJ	REVISED FROM GEN SIDE
6	10-1-65	WJ	REVISED FROM GEN SIDE
7	10-1-65	WJ	REVISED FROM GEN SIDE
8	10-1-65	WJ	REVISED FROM GEN SIDE
9	10-1-65	WJ	REVISED FROM GEN SIDE
10	10-1-65	WJ	REVISED FROM GEN SIDE

NOTE: 1- WIRES TO LOAD SENSOR AMPLIFIER N220 OTHER WIRES N220 OR LARGER.

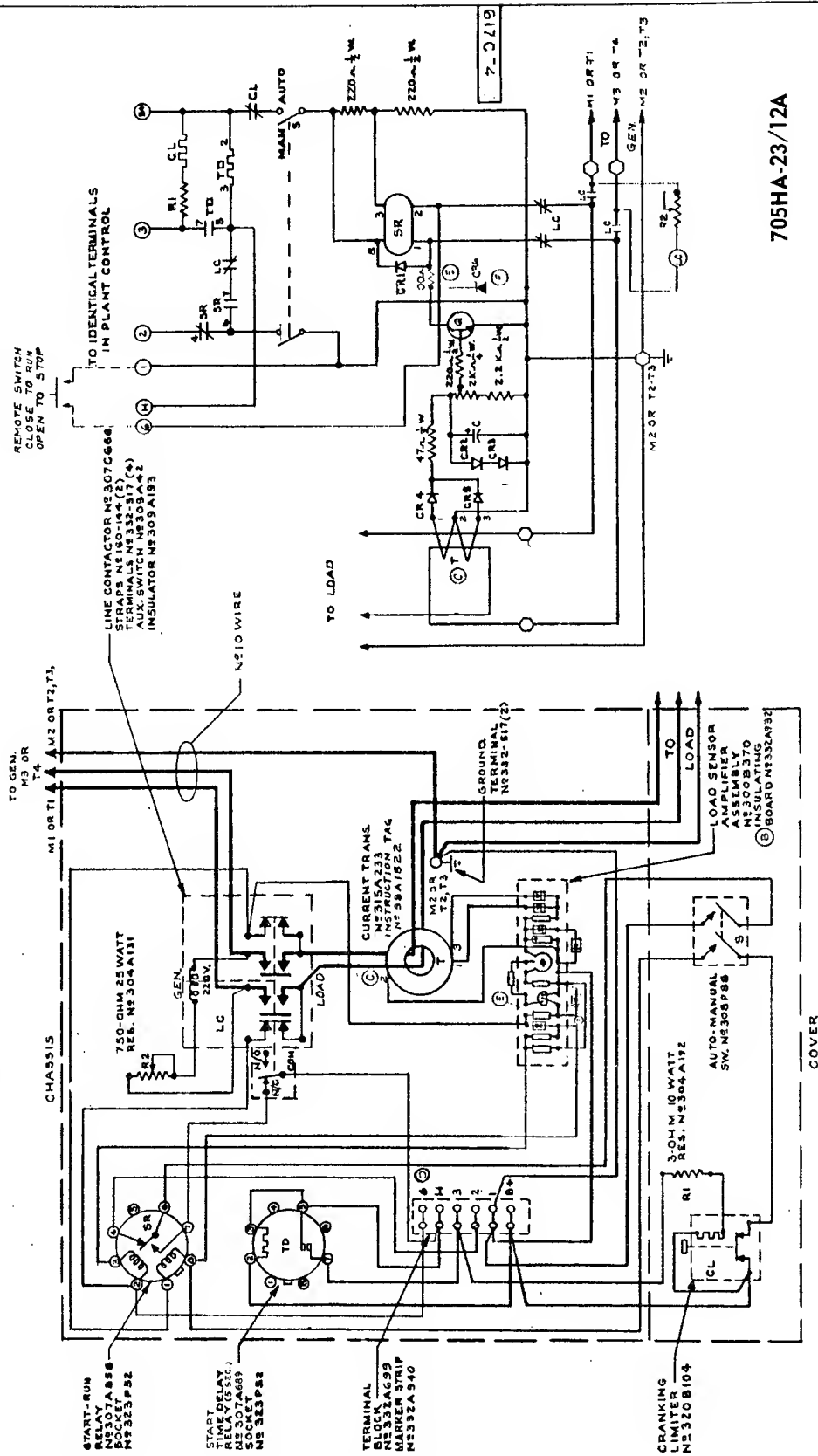
2- OPERATE WITH NEGATIVE GROUND ONLY

817C74

PICTORIAL

75HA-23/12A

SCHEMATIC



NOTE:
1- WIRES TO LOAD SENSOR AMPLIFIER N220
OTHER WIRES N220 OR LARGER.

2- OPERATE WITH NEGATIVE GROUND ONLY

705HA-23/12A

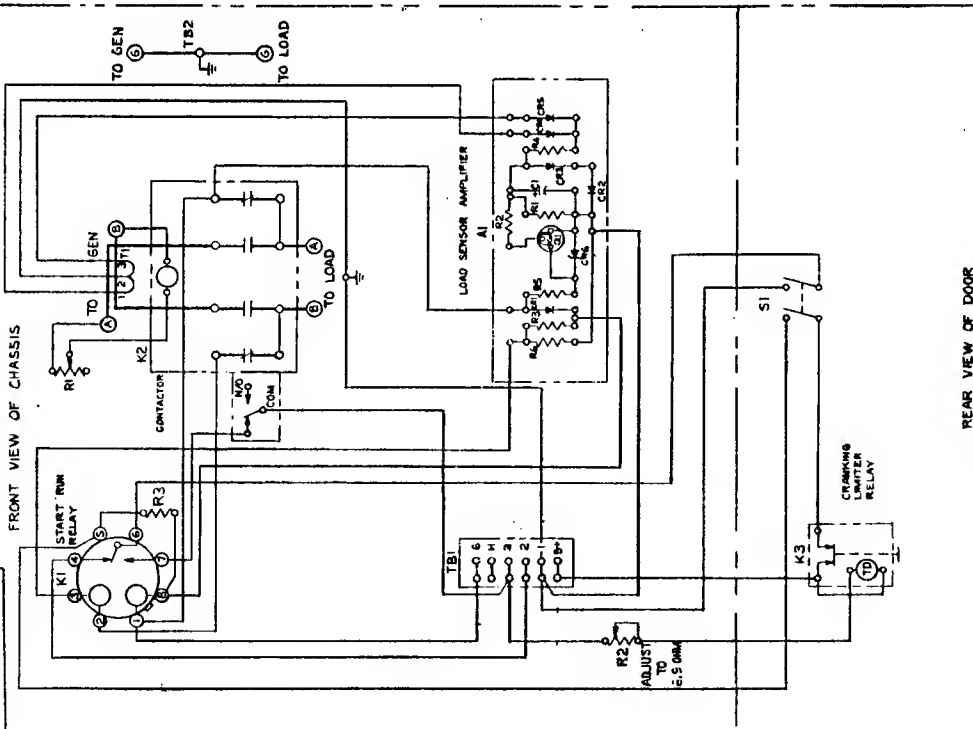
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99	10/13/56			
100	10/13/56			

MODEL	DATE	BY	CHK	APP
75HA-23/12A	4-8-55			
120-240VOLT				
1PH. 3 WIRE 50-60				
12 V. CRANKING				
617 C74				

617C124

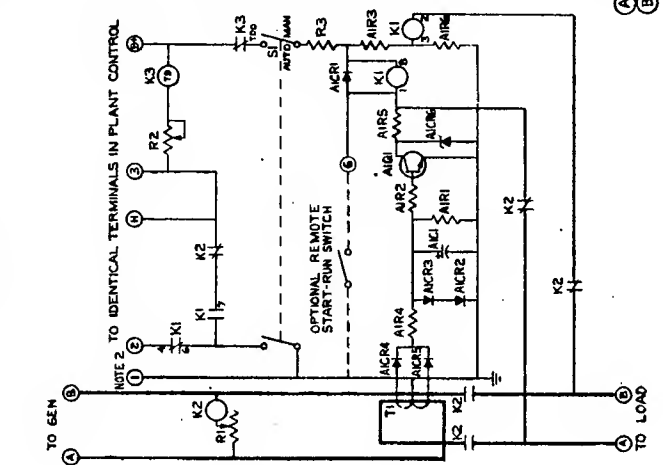
WIRING DIAGRAM

FRONT VIEW OF CHASSIS



REAR VIEW OF DOOR

SCHEMATIC



PARTS LIST

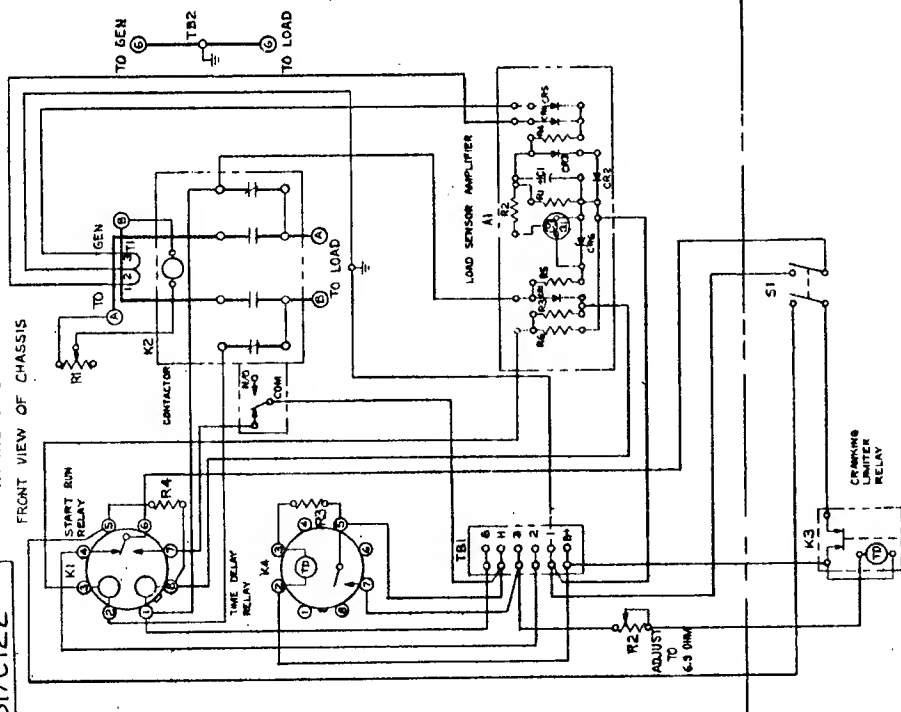
REF ID	PART NO.	QTY	DESCRIPTION
A1	300B463	1	AMPLIFIER ASSY - LOAD SENSOR
A2	300B463	1	BOARD - INSULATING
K1	307A358	1	RELAY - START RUN
K2	307C266	1	CONTACTOR
K3	307C266	1	CONTACTOR
R1	307C266	1	CAUTION LABEL
R2	307C266	2	STRAP
R3	307C266	2	STRAP
S1	307C266	4	TERMINAL
S2	307C266	1	SWITCH - AUX
S3	307C266	1	INSULATOR
S4	307C266	1	RELAY - CRANKING LIMITER
S5	307C266	1	RESISTOR, 750 OHM, 25 W
S6	307C266	1	RESISTOR, 15 OHM, 50 W
S7	307C266	1	RESISTOR, 750 OHM, 2 W
S8	307C266	1	SWITCH - AUTO MANUAL
S9	307C266	1	TRANS. ASSY - CURRENT
S10	307C266	1	BLOCK - TERMINAL
S11	307C266	1	SILK SCREEN
S12	307C266	2	TERMINAL - GROUND
S13	307C266	1	CONTROL BOX
S14	307C266	1	SILK SCREEN
S15	307C266	1	SILK SCREEN
S16	307C266	1	TRIM
S17	307C266	3	FASTENER - TRIM
S18	307C266	1	SCREW - HEX #10-32 X 5/8 LG
S19	307C266	1	LOCKWASHER #10
S20	307C266	1	NAMEPLATE - CONTROL
S21	307C266	1	421C124

705HA-23-3/1A

- CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
- IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
- NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

705HA-23-3/1A	1-25-68	CDR	617C124
24 VOLT CRANKING	180/240 V, 1 PH, 3 WIRE, 50/60 CY		
3 WIRE, 50/60 CY			

617C122

WIRING DIAGRAM
FRONT VIEW OF CHASSIS

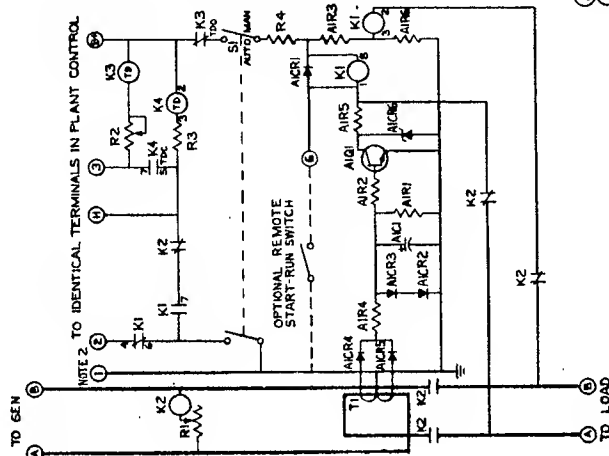
REAR VIEW OF DOOR

3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

SCHEMATIC



NOTE 2: TO IDENTICAL TERMINALS IN PLANT CONTROL

PARTS LIST

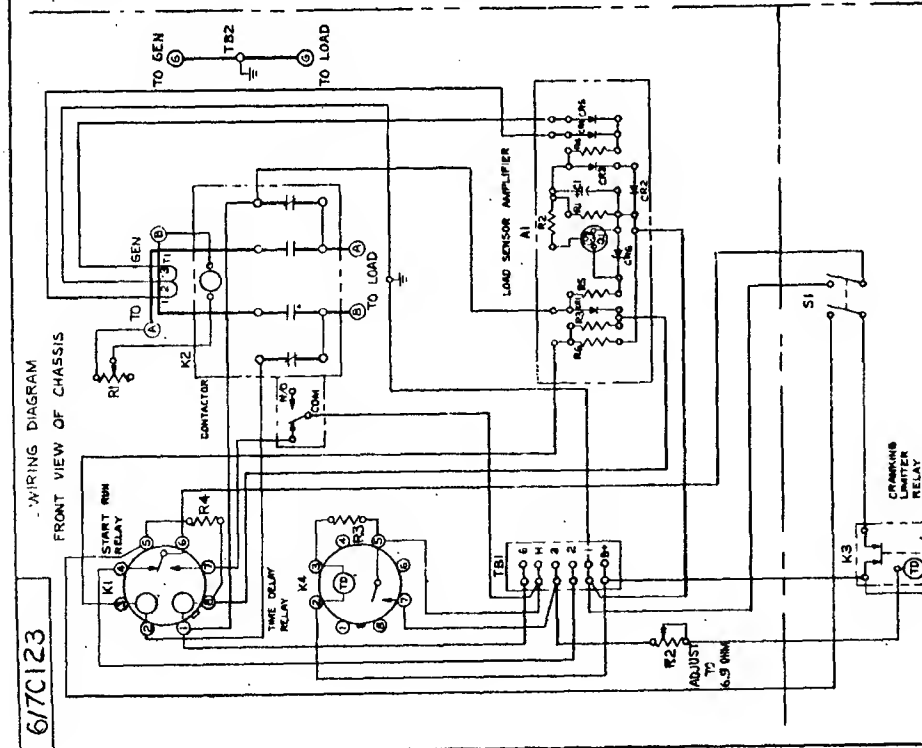
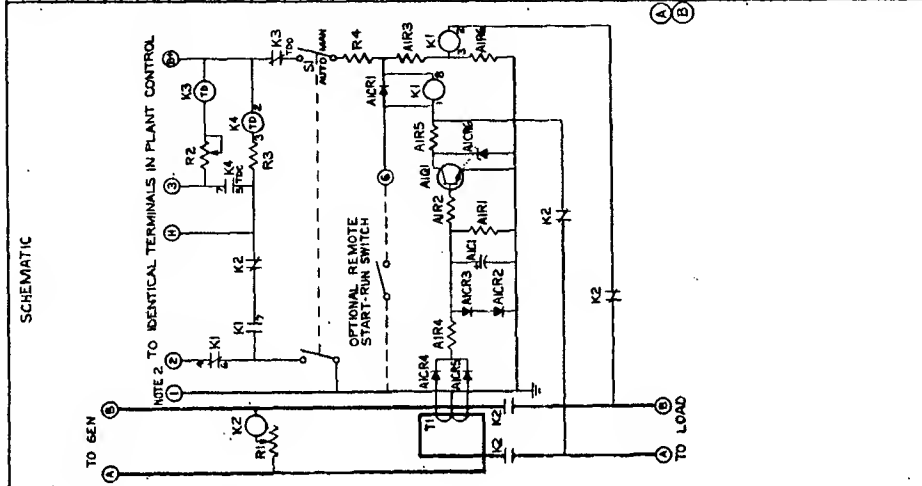
REFDES	PART NO	QTY	DESCRIPTION
A1	3008463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	3028332	1	BOARD - INSULATING
K2	3072658	1	RELAY - START RUN
K3	3072658	1	RELAY - START RUN
K4	3072658	1	RELAY - START RUN
K5	3072658	1	RELAY - START RUN
K6	3072658	1	RELAY - START RUN
K7	3072658	1	RELAY - START RUN
K8	3072658	1	RELAY - START RUN
K9	3072658	1	RELAY - START RUN
K10	3072658	1	RELAY - START RUN
K11	3072658	1	RELAY - START RUN
K12	3072658	1	RELAY - START RUN
K13	3072658	1	RELAY - START RUN
K14	3072658	1	RELAY - START RUN
K15	3072658	1	RELAY - START RUN
K16	3072658	1	RELAY - START RUN
K17	3072658	1	RELAY - START RUN
K18	3072658	1	RELAY - START RUN
K19	3072658	1	RELAY - START RUN
K20	3072658	1	RELAY - START RUN
K21	3072658	1	RELAY - START RUN
K22	3072658	1	RELAY - START RUN
K23	3072658	1	RELAY - START RUN
K24	3072658	1	RELAY - START RUN
K25	3072658	1	RELAY - START RUN
K26	3072658	1	RELAY - START RUN
K27	3072658	1	RELAY - START RUN
K28	3072658	1	RELAY - START RUN
K29	3072658	1	RELAY - START RUN
K30	3072658	1	RELAY - START RUN
K31	3072658	1	RELAY - START RUN
K32	3072658	1	RELAY - START RUN
K33	3072658	1	RELAY - START RUN
K34	3072658	1	RELAY - START RUN
K35	3072658	1	RELAY - START RUN
K36	3072658	1	RELAY - START RUN
K37	3072658	1	RELAY - START RUN
K38	3072658	1	RELAY - START RUN
K39	3072658	1	RELAY - START RUN
K40	3072658	1	RELAY - START RUN
K41	3072658	1	RELAY - START RUN
K42	3072658	1	RELAY - START RUN
K43	3072658	1	RELAY - START RUN
K44	3072658	1	RELAY - START RUN
K45	3072658	1	RELAY - START RUN
K46	3072658	1	RELAY - START RUN
K47	3072658	1	RELAY - START RUN
K48	3072658	1	RELAY - START RUN
K49	3072658	1	RELAY - START RUN
K50	3072658	1	RELAY - START RUN
K51	3072658	1	RELAY - START RUN
K52	3072658	1	RELAY - START RUN
K53	3072658	1	RELAY - START RUN
K54	3072658	1	RELAY - START RUN
K55	3072658	1	RELAY - START RUN
K56	3072658	1	RELAY - START RUN
K57	3072658	1	RELAY - START RUN
K58	3072658	1	RELAY - START RUN
K59	3072658	1	RELAY - START RUN
K60	3072658	1	RELAY - START RUN
K61	3072658	1	RELAY - START RUN
K62	3072658	1	RELAY - START RUN
K63	3072658	1	RELAY - START RUN
K64	3072658	1	RELAY - START RUN
K65	3072658	1	RELAY - START RUN
K66	3072658	1	RELAY - START RUN
K67	3072658	1	RELAY - START RUN
K68	3072658	1	RELAY - START RUN
K69	3072658	1	RELAY - START RUN
K70	3072658	1	RELAY - START RUN
K71	3072658	1	RELAY - START RUN
K72	3072658	1	RELAY - START RUN
K73	3072658	1	RELAY - START RUN
K74	3072658	1	RELAY - START RUN
K75	3072658	1	RELAY - START RUN
K76	3072658	1	RELAY - START RUN
K77	3072658	1	RELAY - START RUN
K78	3072658	1	RELAY - START RUN
K79	3072658	1	RELAY - START RUN
K80	3072658	1	RELAY - START RUN
K81	3072658	1	RELAY - START RUN
K82	3072658	1	RELAY - START RUN
K83	3072658	1	RELAY - START RUN
K84	3072658	1	RELAY - START RUN
K85	3072658	1	RELAY - START RUN
K86	3072658	1	RELAY - START RUN
K87	3072658	1	RELAY - START RUN
K88	3072658	1	RELAY - START RUN
K89	3072658	1	RELAY - START RUN
K90	3072658	1	RELAY - START RUN
K91	3072658	1	RELAY - START RUN
K92	3072658	1	RELAY - START RUN
K93	3072658	1	RELAY - START RUN
K94	3072658	1	RELAY - START RUN
K95	3072658	1	RELAY - START RUN
K96	3072658	1	RELAY - START RUN
K97	3072658	1	RELAY - START RUN
K98	3072658	1	RELAY - START RUN
K99	3072658	1	RELAY - START RUN
K100	3072658	1	RELAY - START RUN

705HA-23-3/10A

TERMINAL	DESCRIPTION
1	TO GEN
2	TO LOAD
3	TO GEN
4	TO LOAD
5	TO GEN
6	TO LOAD
7	TO GEN
8	TO LOAD
9	TO GEN
10	TO LOAD
11	TO GEN
12	TO LOAD
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17	TO GEN
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27	TO GEN
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47	TO GEN
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90	TO LOAD
91	TO GEN
92	TO LOAD
93	TO GEN
94	TO LOAD
95	TO GEN
96	TO LOAD
97	TO GEN
98	TO LOAD
99	TO GEN
100	TO LOAD

617C122

REF DES	PART NO	QTY	DESCRIPTION
A1	3008463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	3029332	1	RELAY - START RUN
K2	3076666	1	CONTACTOR
160-144	2	STRAP	
332-317	4	TERMINAL	
309442	1	SWITCH - AUX	
3094193	1	INSULATOR	
K3	3008104	1	RELAY - CRANKING LIMITER
K4	3076689	1	RELAY - TIME DELAY, PREHEAT (S)
R1	304A131	1	RESISTOR, 750 OHM, 25W
R2	304A222	1	RESISTOR, 15 OHM, 50W
S1	308P98	1	SWITCH - AUTO MANUAL
T1	315A291	1	TRANS. ASSY - CURRENT
T2	332A699	1	LOCK - TERMINAL
T3	332-577	2	TERMINAL - GROUND
R3	352-114	1	RESISTOR, 62 OHM, 2W
R4	350-9B4	1	RESISTOR, 750 OHM, 2W
301D2573	1	CONTROL BOX	
98C1815	1	SILK SCREEN	
98A1545	1	SILK SCREEN	
301D2586	1	TRIM	
518P237	3	FASTENER - TRIM	
815-178	1	SCREW - MET NO #0-32 X 5/8 LG	
850-30	1	LOCKWASHER NO	
99A966	1	NAMEPLATE - CONTROL	
334A1890	25 FT	WIRE-FLEXIBLE NO. 20 AWG	
334A1842	12 FT	WIRE-FLEXIBLE NO. 16 AWG	

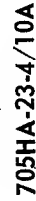


705HA-23-3/12A

PART NO		705HA-23-3/12A		CDR		617C123	
REV		25-67		REV		25-67	
DATE		12/24/67		DATE		12/24/67	
BY		J. H. HARRIS		BY		J. H. HARRIS	
CHK		J. H. HARRIS		CHK		J. H. HARRIS	
APP		J. H. HARRIS		APP		J. H. HARRIS	
DES		J. H. HARRIS		DES		J. H. HARRIS	
DWN		J. H. HARRIS		DWN		J. H. HARRIS	
REV		25-67		REV		25-67	
DATE		12/24/67		DATE		12/24/67	
BY		J. H. HARRIS		BY		J. H. HARRIS	
CHK		J. H. HARRIS		CHK		J. H. HARRIS	
APP		J. H. HARRIS		APP		J. H. HARRIS	
DES		J. H. HARRIS		DES		J. H. HARRIS	
DWN		J. H. HARRIS		DWN		J. H. HARRIS	

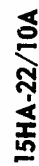
- CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
- IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY




(J) 2 - OPERATE WITH NEGATIVE GROUPS ONLY

J. SLOTER NOTE 2		27	9-13-66
1	TIME 5042Z	30	4-28-66
2	TIME 5042Z	31	4-28-66
3	MODER CMC	32	4-28-66
4	MODER CMC	33	4-28-66
5	ELACED 504- RES	34	4-28-66
6	ELACED TERMINAL 6	35	4-28-66
7	ELACED - FROM JEN. SIDE	36	4-28-66
8	ELACED - FROM JEN. SIDE	37	4-28-66
9	ELACED - FROM JEN. SIDE	38	4-28-66
10	ELACED - FROM JEN. SIDE	39	4-28-66
11	ELACED - FROM JEN. SIDE	40	4-28-66
12	ELACED - FROM JEN. SIDE	41	4-28-66
13	ELACED - FROM JEN. SIDE	42	4-28-66
14	ELACED - FROM JEN. SIDE	43	4-28-66
15	ELACED - FROM JEN. SIDE	44	4-28-66
16	ELACED - FROM JEN. SIDE	45	4-28-66
17	ELACED - FROM JEN. SIDE	46	4-28-66
18	ELACED - FROM JEN. SIDE	47	4-28-66
19	ELACED - FROM JEN. SIDE	48	4-28-66
20	ELACED - FROM JEN. SIDE	49	4-28-66
21	ELACED - FROM JEN. SIDE	50	4-28-66
22	ELACED - FROM JEN. SIDE	51	4-28-66
23	ELACED - FROM JEN. SIDE	52	4-28-66
24	ELACED - FROM JEN. SIDE	53	4-28-66
25	ELACED - FROM JEN. SIDE	54	4-28-66
26	ELACED - FROM JEN. SIDE	55	4-28-66
27	ELACED - FROM JEN. SIDE	56	4-28-66
28	ELACED - FROM JEN. SIDE	57	4-28-66
29	ELACED - FROM JEN. SIDE	58	4-28-66
30	ELACED - FROM JEN. SIDE	59	4-28-66
31	ELACED - FROM JEN. SIDE	60	4-28-66
32	ELACED - FROM JEN. SIDE	61	4-28-66
33	ELACED - FROM JEN. SIDE	62	4-28-66
34	ELACED - FROM JEN. SIDE	63	4-28-66
35	ELACED - FROM JEN. SIDE	64	4-28-66
36	ELACED - FROM JEN. SIDE	65	4-28-66
37	ELACED - FROM JEN. SIDE	66	4-28-66
38	ELACED - FROM JEN. SIDE	67	4-28-66
39	ELACED - FROM JEN. SIDE	68	4-28-66
40	ELACED - FROM JEN. SIDE	69	4-28-66
41	ELACED - FROM JEN. SIDE	70	4-28-66
42	ELACED - FROM JEN. SIDE	71	4-28-66
43	ELACED - FROM JEN. SIDE	72	4-28-66
44	ELACED - FROM JEN. SIDE	73	4-28-66
45	ELACED - FROM JEN. SIDE	74	4-28-66
46	ELACED - FROM JEN. SIDE	75	4-28-66
47	ELACED - FROM JEN. SIDE	76	4-28-66
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51	ELACED - FROM JEN. SIDE	80	4-28-66
52	ELACED - FROM JEN. SIDE	81	4-28-66
53	ELACED - FROM JEN. SIDE	82	4-28-66
54	ELACED - FROM JEN. SIDE	83	4-28-66
55	ELACED - FROM JEN. SIDE	84	4-28-66
56	ELACED - FROM JEN. SIDE	85	4-28-66
57	ELACED - FROM JEN. SIDE	86	4-28-66
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59	ELACED - FROM JEN. SIDE	88	4-28-66
60	ELACED - FROM JEN. SIDE	89	4-28-66
61	ELACED - FROM JEN. SIDE	90	4-28-66
62	ELACED - FROM JEN. SIDE	91	4-28-66
63	ELACED - FROM JEN. SIDE	92	4-28-66
64	ELACED - FROM JEN. SIDE	93	4-28-66
65	ELACED - FROM JEN. SIDE	94	4-28-66
66	ELACED - FROM JEN. SIDE	95	4-28-66
67	ELACED - FROM JEN. SIDE	96	4-28-66
68	ELACED - FROM JEN. SIDE	97	4-28-66
69	ELACED - FROM JEN. SIDE	98	4-28-66
70	ELACED - FROM JEN. SIDE	99	4-28-66
71	ELACED - FROM JEN. SIDE	100	4-28-66
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75	ELACED - FROM JEN. SIDE	104	4-28-66
76	ELACED - FROM JEN. SIDE	105	4-28-66
77	ELACED - FROM JEN. SIDE	106	4-28-66
78	ELACED - FROM JEN. SIDE	107	4-28-66
79	ELACED - FROM JEN. SIDE	108	4-28-66
80	ELACED - FROM JEN. SIDE	109</	

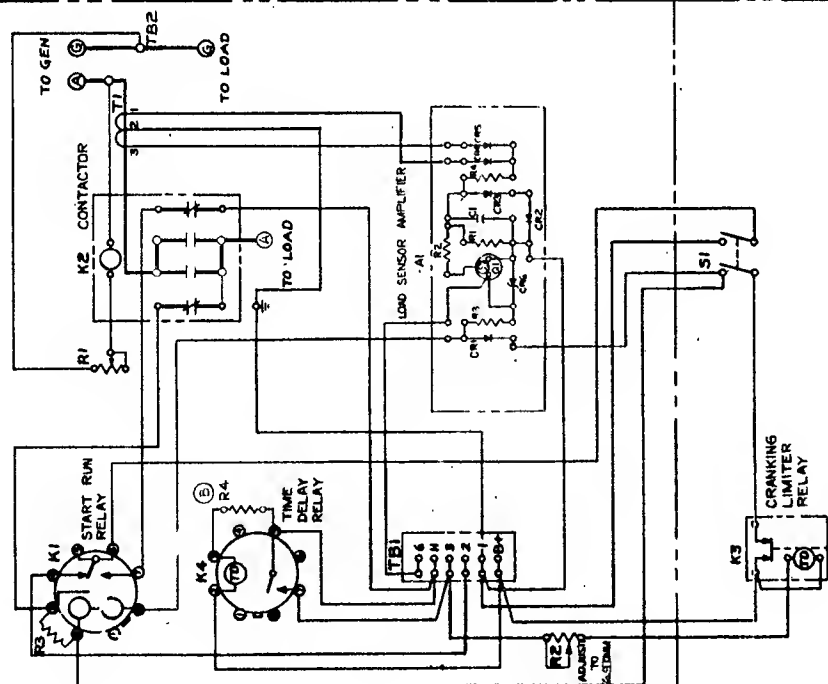


LEI	REVISION	CBS	DATE
F	ADDED CRU	1	6-7-66
E	MOVED "1" WAS NO. 315423	10	2-7-66
C	ADDED TERMINAL 6	10	10-26-65
D	MOVED "1" FROM SIDE	9	9-14-65
B	WAS 332 A 767	8	6-7-63
A	WAS BOX 4554, 1010158	1	6-3-65

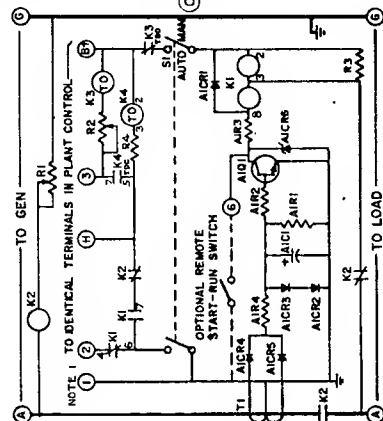
 DIVISION OF THOMSON CORPORATION					
AUTOMATIC DEMAND CONTROL WIRING DIAGRAM					
MODEL		C.K.H.		J.V.A.B	
15HA-22/10A		4-12-65		10	
240VOLT 1PH. 2WIRE 50-60W					
12 V. CRANKING		617 C 71			

WIRING DIAGRAM

FRONT VIEW OF CHASSIS



SCHEMATIC

[illegible]

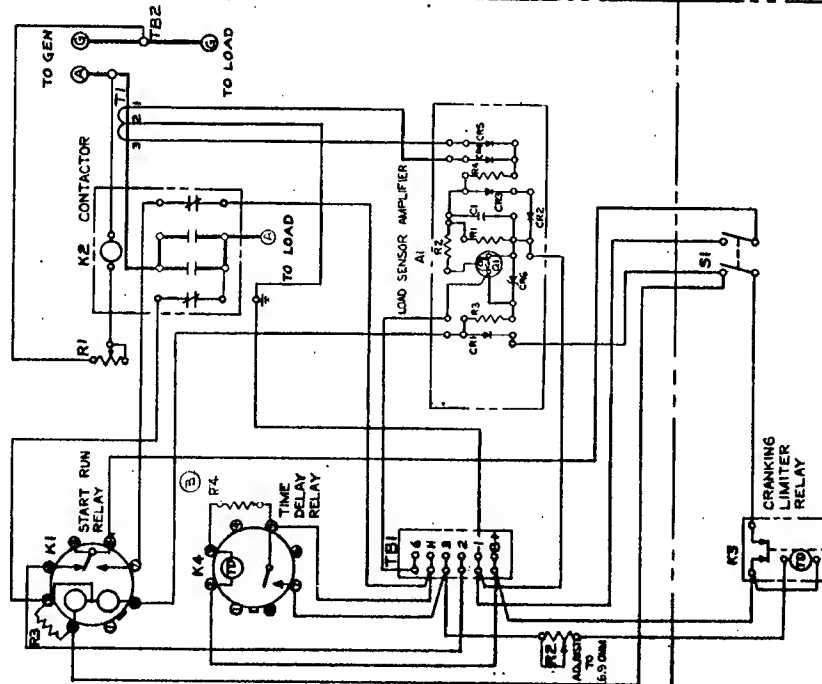
15HA-22-3/10A

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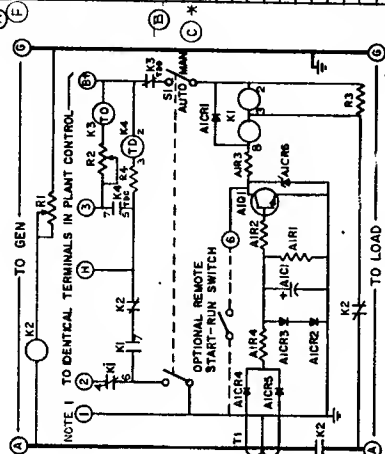
NOTES:

1. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
2. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

FRONT VIEW OF CHASSIS



PARIS LIST



REFDES	PART NO	QTY	PARTS LIST
A1	300B482	1	AMPLIFIER ASSY-LOAD SENSOR
K1	307A62	1	BOARD-INSULATING
K2	307A62	1	RELAY-START RUN
K3	307C380	1	SOCKET
K4	307C566	1	CONTACTOR
K5	307A142	2	TERMINAL
K6	307A455	2	JUMPER
K7	302B104	1	RELAY-CRANKING LIMITER
K8	307A589	1	RELAY-TIME DELAY, STARTING ES
R1	302P380	1	SOCKET
R2	304A131	1	RESISTOR, 750-OHM, 25W
R3	304A66	1	RESISTOR, 10-OHM, 50W
S1	308P88	1	SWITCH-AUTO MANUAL
T1	315A241	1	TRANS. ASSY- CURRENT
T2	332A699	1	BLOCK- TERMINAL
T3	308A927	1	SILK SCREEN
T4	332-142	2	TERMINAL- GROUND
R4	304A47	1	RESISTOR, 15-OHM, 25 W
R5	352-114	1	RESISTOR, 62-OHM, 2.5W
	96A2045	1	CAUTION LABEL
	301D2573	1	CONTROL BOX
	58C1815	1	SILK SCREEN
	98A1957	1	SILK SCREEN
	301B2566	1	TRIM
	518P237	3	FASTENER- TRIM
	815-178	1	SCREW-HEX HD #4-32X1/16
	850-50	1	LOCKWASHER #10
	99A966	1	NAMEPLATE-CONTROL
	334A1890	25 FT	WIRE-FLEXIBLE NC-25-2-5
	334A1842	12 FT	WIRE-FLEXIBLE NC-16-2-3
			10101719

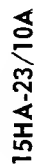
15HA-22-3/12A

[illegible]


○ 科學社

DATE	10-1-65	BY	W. M. VJB
158A-22-3/24 24 VOLT CRANKING SCHEMATIC WIRING DIAGRAM AUTOMATIC DEMAND CONTROL 240 V ₂ 1 PH. 2W, 50/60CY.			
617C107			

- NOTES:
1. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
 2. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.



⑥ 2- OPERATE WITH NEGATIVE GROUND ONLY

MODEL	150HA-23/10A	
	120-240VOLT	
	1PH. 3WIRE 50-60	
	TO WIRING	
DATE	4-12-65	BY W. J. W.B.
CHK	OK	TIME
 OGDEN DIVISION OF PAPERMAN CORPORATION 10000 W. 10th Avenue, Minneapolis, Minnesota		
LET	INTENTION	DATE
G	ADDED NOTE 2	7-12-66
A	ADDED 100A	7-12-66
E	ADDED 100A RES	7-12-66
C	RECEIVED TERMINAL 2	7-12-66
C	CHANGED FROM GEN SV	7-12-66
B	WAS N2338A707	6-3-65
A	WAS BOK A55330B2508	6-3-65

SCHEMATIC



NOTE:
WIRES TO LOAD SENSOR AMPLIFIER NO. 20
OTHER WIRES NO. 20 OR LARGER.

15HA-23/12A	NAME	AUTOMATIC DEMAND
120-240 VOLT		CONTROL WIRING DIAGRAM
1PH 3 WIRE 50-60~	REF. NO.	517 C 69
12 V CRANKING		

SCHEMATIC



15HA-23-3/12A

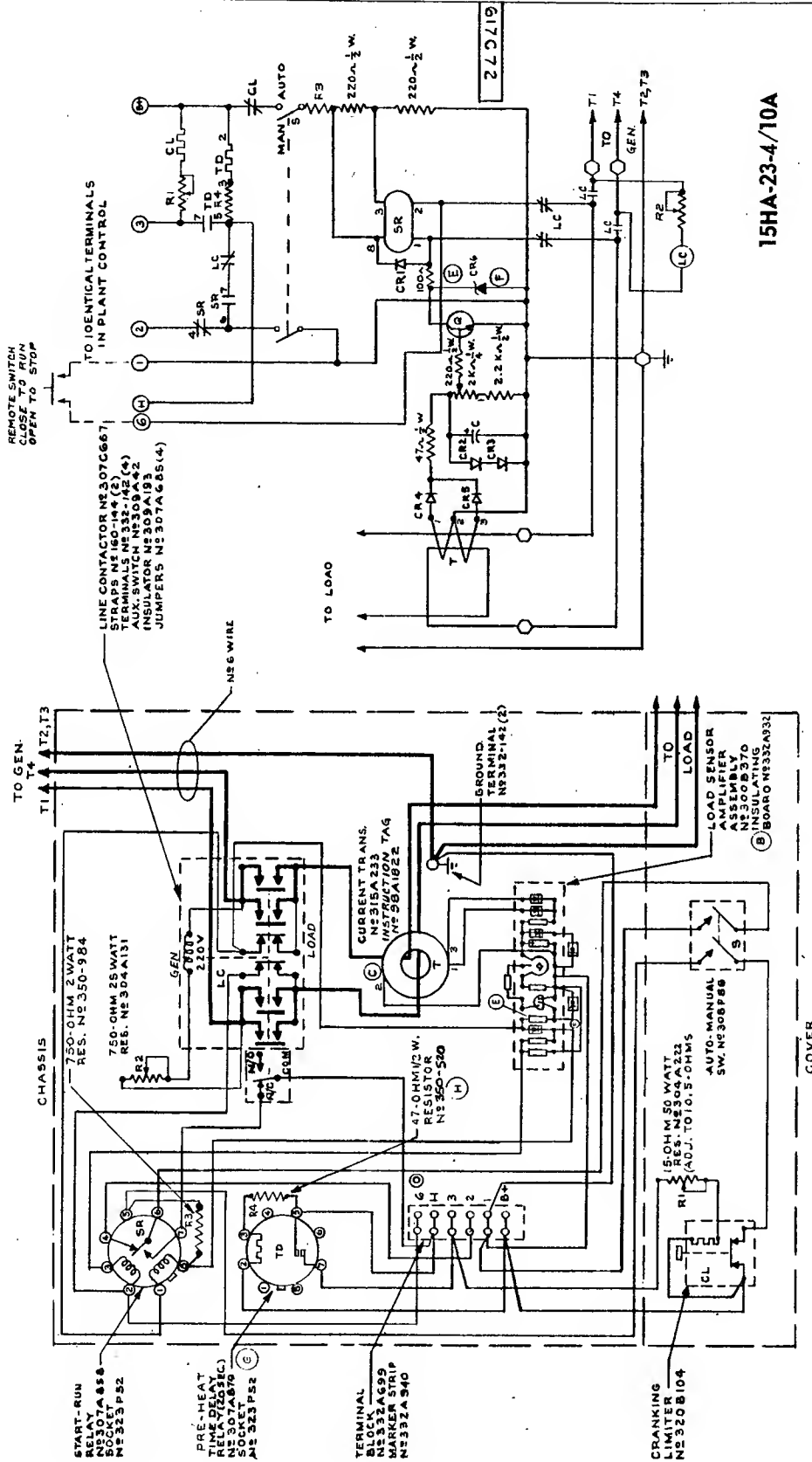
NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

617 C 72

PICTORIAL

SCHEMATIC

15HA-23-4/10A



NOTE:
1- WIRES TO LOAD SENSOR AMPLIFIER N220
OTHER WIRES N220 OR LARGER.

2- OPERATE WITH NEGATIVE GROUND ONLY

15HA-23-4/10A

J	ADDED	NOTE 2	JV	9-13-66
K	ADDED	NOTE 3	JV	9-13-66
L	ADDED	NOTE 4	JV	9-13-66
M	ADDED	NOTE 5	JV	9-13-66
N	ADDED	NOTE 6	JV	9-13-66
O	ADDED	NOTE 7	JV	9-13-66
P	ADDED	NOTE 8	JV	9-13-66
Q	ADDED	NOTE 9	JV	9-13-66
R	ADDED	NOTE 10	JV	9-13-66
S	ADDED	NOTE 11	JV	9-13-66
T	ADDED	NOTE 12	JV	9-13-66
U	ADDED	NOTE 13	JV	9-13-66
V	ADDED	NOTE 14	JV	9-13-66
W	ADDED	NOTE 15	JV	9-13-66
X	ADDED	NOTE 16	JV	9-13-66
Y	ADDED	NOTE 17	JV	9-13-66
Z	ADDED	NOTE 18	JV	9-13-66
AA	ADDED	NOTE 19	JV	9-13-66
AB	ADDED	NOTE 20	JV	9-13-66
AC	ADDED	NOTE 21	JV	9-13-66
AD	ADDED	NOTE 22	JV	9-13-66
AE	ADDED	NOTE 23	JV	9-13-66
AF	ADDED	NOTE 24	JV	9-13-66
AG	ADDED	NOTE 25	JV	9-13-66
AH	ADDED	NOTE 26	JV	9-13-66
AI	ADDED	NOTE 27	JV	9-13-66
AJ	ADDED	NOTE 28	JV	9-13-66
AK	ADDED	NOTE 29	JV	9-13-66
AL	ADDED	NOTE 30	JV	9-13-66
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KA	ADDED	NOTE 279	JV	9-13

**INDEX
FOR
SPEC B CONTROLS**

Find the appropriate model and proceed to the indicated page for the wiring diagram.

WATT RATING	MODEL	WIRING DIAGRAM	PAGE
3,500	305HA-21/1	617C90	35
	305HA-21/10	617C91	36
7,500	7.5HA-21/1	617C92	37
	7.5HA-21/10	617C93	38
	7.5HA-21/12	617C94	39
	7.5HA-21/17	617C129	40
	7.5HA-21-4/1	617C113	41
	7.5HA-21-4/10	617C114	42
	7.5HA-22/1	617C95	43
	7.5HA-22/10	617C96	44
	7.5HA-22/12	617C97	45
	7.5HA-23/1	617C102	46
	7.5HA-23/10	617C101	47
	7.5HA-23/12	617C103	48
	7.5HA-23-4/1	617C128	49
	7.5HA-23-4/10	617C111	50
15,000	15.0HA-22/10	617C98	51
	15.0HA-22/12	617C99	52
	15.0HA-23/1	617C100	53
	15.0HA-23/10	617C105	54
	15.0HA-23/12	617C104	55
	15.0HA-23/15	617C116	56
	15.0HA-23/17	617C130	57
	15.0HA-23/18	617C131	58
	15.0HA-23-4/10	617C112	59

FRONT VIEW OF CHASSIS



1. OPERATE WITH NEGATIVE GROUND ONLY
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GND, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GND IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.



305HA-21/1B

[illegible]

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<p> UT DATE REMARKS </p>	<p> DATE REMARKS </p>

0-8-68

STATION OF PREVIOUS CONSTRUCTION

DATE OF PREVIOUS CONSTRUCTION

REMARKS

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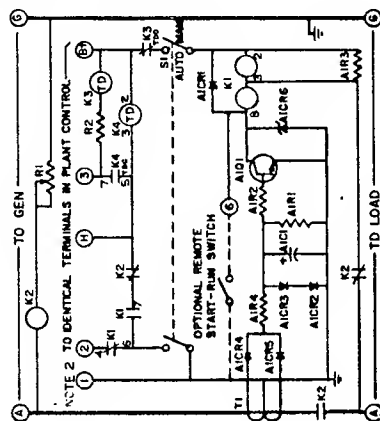
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100-11

WIRING DIAGRAM

SCHEMATIC



REF DES	PART NO	QTY	PARTS LIST	DESCRIPTION
A1	300B437	1	AMPLIFIER ASSY-LOAD SENSOR	
	302A932	1	BOARD-INSULATING	
K1	307A62	1	RELAY-START RUN	
	303P350	1	SOCKET	
A2	307C663	1	CONTACTOR	
	332-517	2	TERMINAL	
	98A2043	1	CAUTION LABEL	
A3	300B104	1	RELAY-CRANKING LIMITER	
K4	307A645	1	RELAY-TIME DELAY-START/STOP	
	303P350	1	SOCKET	
R1	301A282	1	RESISTOR 300-OHM, 25W	
R2	304A192	1	RESISTOR 3-OHM, 10W	
S1	308P08	1	SWITCH-AUTO MANUAL	
T1	315A241	1	TRANS. ASSY- CURRENT	
TB1	332A439	1	BLOCK-TERMINAL	
	98A1927	1	SILK SCREEN	
TB2	332-517	2	TERMINAL- GROUND	
	301D2573	1	CONTROL BOX	
	98C1815	1	SILK SCREEN	
	98A1528	1	SILK SCREEN	
	301B2584	1	TRIM	
	518P237	3	FASTENER- TRIM	
	815-178	1	SCREW-HEX MD-32X1/8	
	850-30	1	LOCKWASHER #10	
	95A966	1	NAMEPLATE-CONTROL	
				1C7CG1

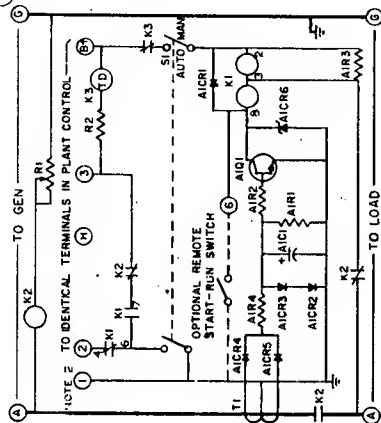
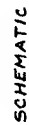
305HA-21/10B

[illegible]

NOTE:

- NOTE: 1- OPERATE WITH NEGATIVE GROUND ONLY
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2) - THE AC INPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

FRONT VIEW OF CHASSIS

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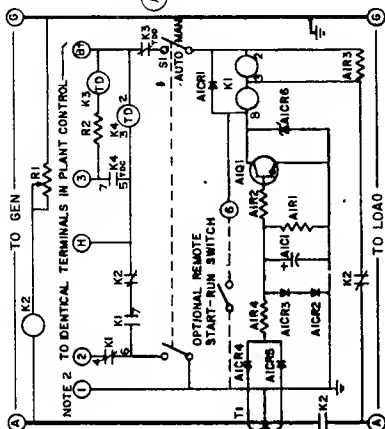
7.5HA-21/1B

NOTE:

1. - OPERATE WITH NEGATIVE GROUND ONLY .
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (A2). THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

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SCHEMATIC

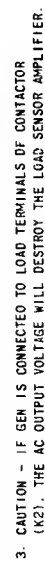


3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

7.5HA-21/10B

7.5HA-21/10B
12 VOLT CRANKING
120V, 1 PH.
2W, 50/60CY.

FRONT VIEW OF CHASSIS

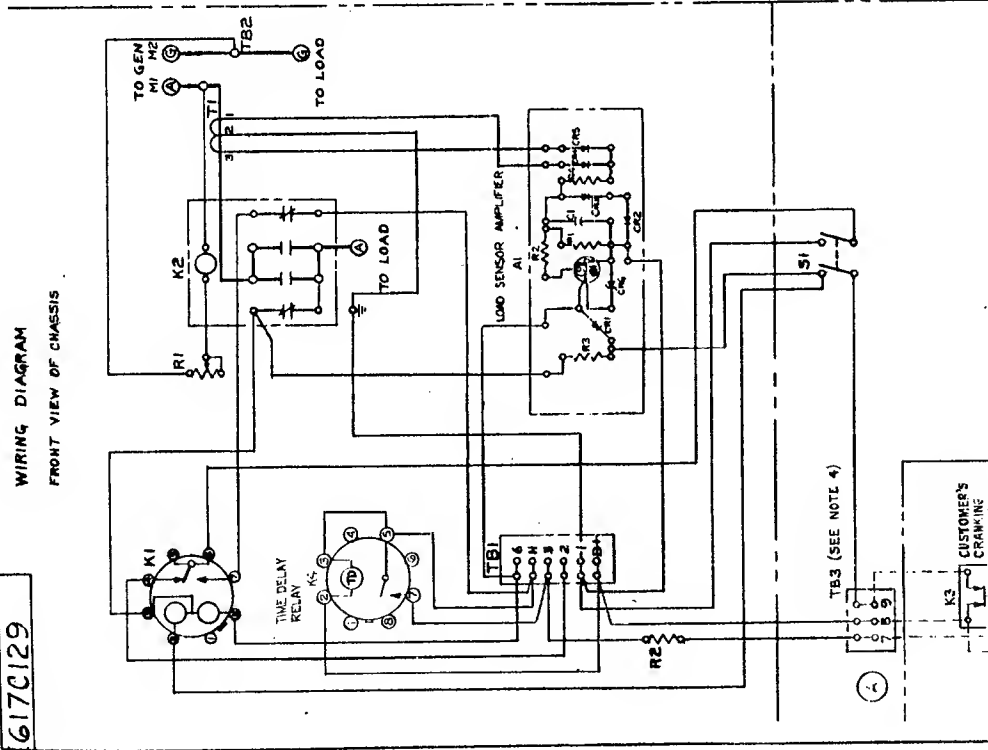


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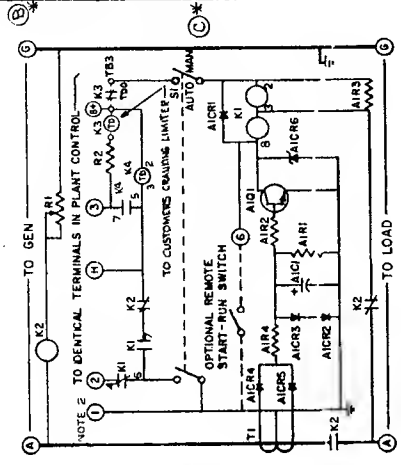


7.5HA-21/12B

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WIRING DIAGRAM
FRONT VIEW OF CHASSIS




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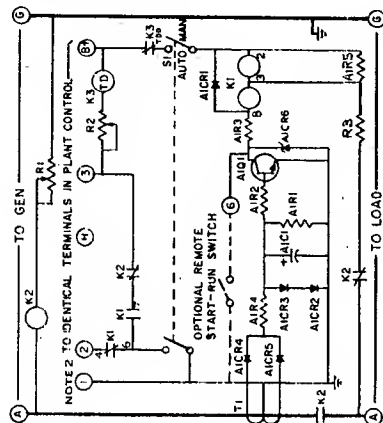
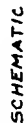
REFDES	PART NO	QTY	DESCRIPTION
A1	300B437	1	AMPLIFIER ASSY-LOAD SENSOR
	332A932	1	BOARD-INSULATING
K1	307A62	1	RELAY-START RUN
	323P380	1	SOCKET
K2	307C645	1	CONTACTOR
	332-142	2	TERMINAL
	307A685	2	JUMPER
K3	58A2045	1	CAUTION LABEL
	32B3041B	1	RELAY-CRANKING LIMITER
K4	307A645	1	RELAY-TIME DELAY RELAY (25S)
R1	304A282	1	RESISTOR 300-OHM,25W
R2	304A132	1	RESISTOR 3-OHM,10W
S1	308P88	1	SWITCH-AUTO MANUAL
T1	315A241	1	TRANS-ASSY-CURRENT
TB1	332A699	1	BLOCK-TERMINAL
	98A1927	1	SILK SCREEN
TB2	332-142	2	TERMINAL-GROUND
TB3	332A611	1	BLOCK-TERMINAL
	332A612	1	STRIP-WARKER (SEE NOTE 4)
	323P380	1	SOCKET
	301D2573	1	CONTROL BOX (MOD FM)
	98C1815	1	SILK SCREEN
	98A1928	1	SILK SCREEN
	301B2566	1	TRIM
	518P237	3	FASTENER-TRIM
	815-178	1	SCREW-HEX HD-#0-32X1/8L6
	850-30	1	LOCK WASHER #10
	99A966	1	NAMEPLATE-CONTROL

7.5HA-21/17B

[illegible]

- NOTE: 
1. OPERATE WITH NEGATIVE GROUND ONLY
 2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
 3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
 4. PAINT BACK OF MARKER STRIP WHITE, BEFORE MTG IT IN BOX.

FRONT VIEW OF CHASSIS



7.5HA-21-4/1B

I. OPERATE WITH NEGATIVE GROUND ONLY.

- | | | |
|-----|----------------------|----------|
| F | ADDED DASH NC. | 11-12-63 |
| E | ADDED WFE NO 344 342 | 11-12-63 |
| D | " " 344 343 | 11-12-63 |
| C | AS 323P2 SOCKET | 11-12-63 |
| B | 323P2 | 11-12-63 |
| A | ADDED 34A 203 | 11-12-63 |
| INT | REVISION | (P) 3412 |

44. MOUNT SWITCH WITH FINISHING NUT ON THE FRONT PANEL.

Oggs

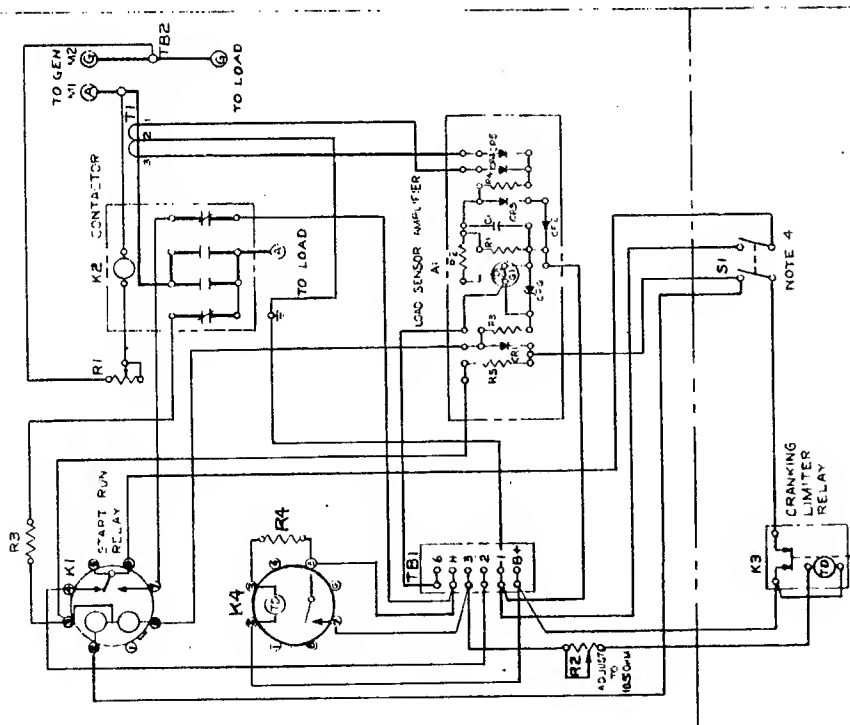
7.5NA-21-4/1B
32 VOLT CRANKING
120 V, 1PH,
2W., 50/60HZ.

DATE	20-1-77	BY	CSF	NO	118
SCHEMATIC & WIRING DIAGRAM					
AUTOMATIC DEMAND CONTROL					
617C113					

617C114

WIRING DIAGRAM

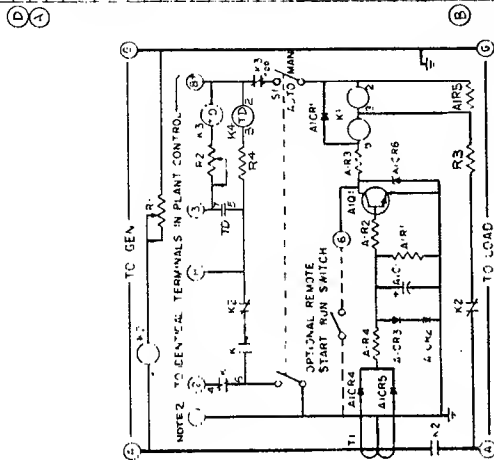
FRONT VIEW OF CHASSIS



NOTES:

1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN., BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
4. MOUNT SWITCH WITH FINISHING NUT ON THE FRONT PANEL.

SCHEMATIC



7.5HA-21-4/10B

PARTS LIST		DESCRIPTION	
Q1	300B48E	AMPLIFIER ASSY-LOAD SENSOR	
K1	302A932	BOARD-INSULATING	
K2	307A62	RELAY-START RUN	
K3	307C350	CONTACTOR	
K4	307C350	CONTACTOR	
R1	307C350	RESISTOR-5.00M, 25W	
R2	307C350	RESISTOR-5.00M, 25W	
R3	307C350	RESISTOR-5.00M, 25W	
R4	307C350	RESISTOR-5.00M, 25W	
R5	307C350	RESISTOR-5.00M, 25W	
R6	307C350	RESISTOR-5.00M, 25W	
R7	307C350	RESISTOR-5.00M, 25W	
R8	307C350	RESISTOR-5.00M, 25W	
R9	307C350	RESISTOR-5.00M, 25W	
R10	307C350	RESISTOR-5.00M, 25W	
R11	307C350	RESISTOR-5.00M, 25W	
R12	307C350	RESISTOR-5.00M, 25W	
R13	307C350	RESISTOR-5.00M, 25W	
R14	307C350	RESISTOR-5.00M, 25W	
R15	307C350	RESISTOR-5.00M, 25W	
R16	307C350	RESISTOR-5.00M, 25W	
R17	307C350	RESISTOR-5.00M, 25W	
R18	307C350	RESISTOR-5.00M, 25W	
R19	307C350	RESISTOR-5.00M, 25W	
R20	307C350	RESISTOR-5.00M, 25W	
R21	307C350	RESISTOR-5.00M, 25W	
R22	307C350	RESISTOR-5.00M, 25W	
R23	307C350	RESISTOR-5.00M, 25W	
R24	307C350	RESISTOR-5.00M, 25W	
R25	307C350	RESISTOR-5.00M, 25W	
R26	307C350	RESISTOR-5.00M, 25W	
R27	307C350	RESISTOR-5.00M, 25W	
R28	307C350	RESISTOR-5.00M, 25W	
R29	307C350	RESISTOR-5.00M, 25W	
R30	307C350	RESISTOR-5.00M, 25W	
R31	307C350	RESISTOR-5.00M, 25W	
R32	307C350	RESISTOR-5.00M, 25W	
R33	307C350	RESISTOR-5.00M, 25W	
R34	307C350	RESISTOR-5.00M, 25W	
R35	307C350	RESISTOR-5.00M, 25W	
R36	307C350	RESISTOR-5.00M, 25W	
R37	307C350	RESISTOR-5.00M, 25W	
R38	307C350	RESISTOR-5.00M, 25W	
R39	307C350	RESISTOR-5.00M, 25W	
R40	307C350	RESISTOR-5.00M, 25W	
R41	307C350	RESISTOR-5.00M, 25W	
R42	307C350	RESISTOR-5.00M, 25W	
R43	307C350	RESISTOR-5.00M, 25W	
R44	307C350	RESISTOR-5.00M, 25W	
R45	307C350	RESISTOR-5.00M, 25W	
R46	307C350	RESISTOR-5.00M, 25W	
R47	307C350	RESISTOR-5.00M, 25W	
R48	307C350	RESISTOR-5.00M, 25W	
R49	307C350	RESISTOR-5.00M, 25W	
R50	307C350	RESISTOR-5.00M, 25W	
R51	307C350	RESISTOR-5.00M, 25W	
R52	307C350	RESISTOR-5.00M, 25W	
R53	307C350	RESISTOR-5.00M, 25W	
R54	307C350	RESISTOR-5.00M, 25W	
R55	307C350	RESISTOR-5.00M, 25W	
R56	307C350	RESISTOR-5.00M, 25W	
R57	307C350	RESISTOR-5.00M, 25W	
R58	307C350	RESISTOR-5.00M, 25W	
R59	307C350	RESISTOR-5.00M, 25W	
R60	307C350	RESISTOR-5.00M, 25W	
R61	307C350	RESISTOR-5.00M, 25W	
R62	307C350	RESISTOR-5.00M, 25W	
R63	307C350	RESISTOR-5.00M, 25W	
R64	307C350	RESISTOR-5.00M, 25W	
R65	307C350	RESISTOR-5.00M, 25W	
R66	307C350	RESISTOR-5.00M, 25W	
R67	307C350	RESISTOR-5.00M, 25W	
R68	307C350	RESISTOR-5.00M, 25W	
R69	307C350	RESISTOR-5.00M, 25W	
R70	307C350	RESISTOR-5.00M, 25W	
R71	307C350	RESISTOR-5.00M, 25W	
R72	307C350	RESISTOR-5.00M, 25W	
R73	307C350	RESISTOR-5.00M, 25W	
R74	307C350	RESISTOR-5.00M, 25W	
R75	307C350	RESISTOR-5.00M, 25W	
R76	307C350	RESISTOR-5.00M, 25W	
R77	307C350	RESISTOR-5.00M, 25W	
R78	307C350	RESISTOR-5.00M, 25W	
R79	307C350	RESISTOR-5.00M, 25W	
R80	307C350	RESISTOR-5.00M, 25W	
R81	307C350	RESISTOR-5.00M, 25W	
R82	307C350	RESISTOR-5.00M, 25W	
R83	307C350	RESISTOR-5.00M, 25W	
R84	307C350	RESISTOR-5.00M, 25W	
R85	307C350	RESISTOR-5.00M, 25W	
R86	307C350	RESISTOR-5.00M, 25W	
R87	307C350	RESISTOR-5.00M, 25W	
R88	307C350	RESISTOR-5.00M, 25W	
R89	307C350	RESISTOR-5.00M, 25W	
R90	307C350	RESISTOR-5.00M, 25W	
R91	307C350	RESISTOR-5.00M, 25W	
R92	307C350	RESISTOR-5.00M, 25W	
R93	307C350	RESISTOR-5.00M, 25W	
R94	307C350	RESISTOR-5.00M, 25W	
R95	307C350	RESISTOR-5.00M, 25W	
R96	307C350	RESISTOR-5.00M, 25W	
R97	307C350	RESISTOR-5.00M, 25W	
R98	307C350	RESISTOR-5.00M, 25W	
R99	307C350	RESISTOR-5.00M, 25W	
R100	307C350	RESISTOR-5.00M, 25W	

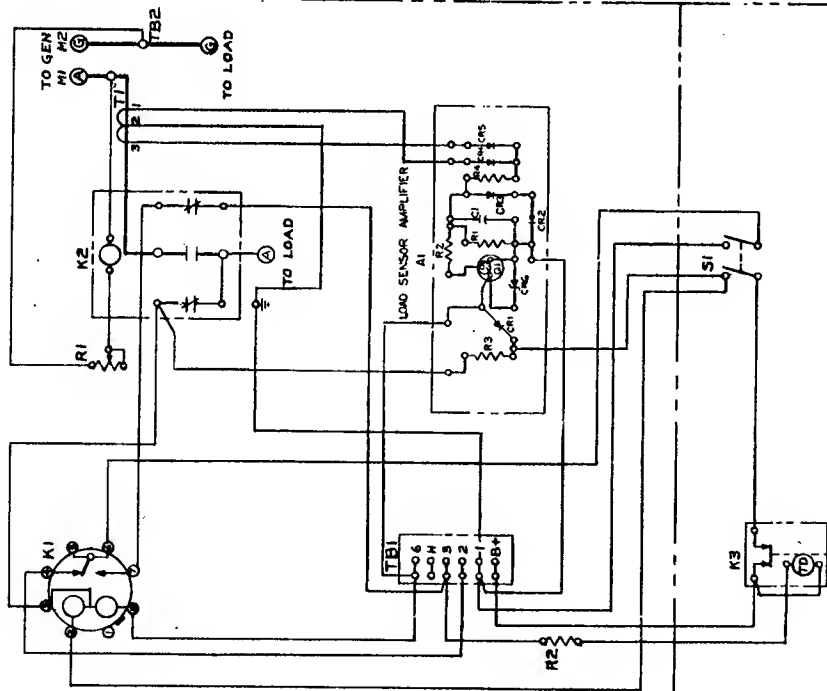
7.5HA-21-4/10B

32 VOLT CRANKING

2W, 50/60HZ

617C114

FRONT VIEW OF CHASSIS



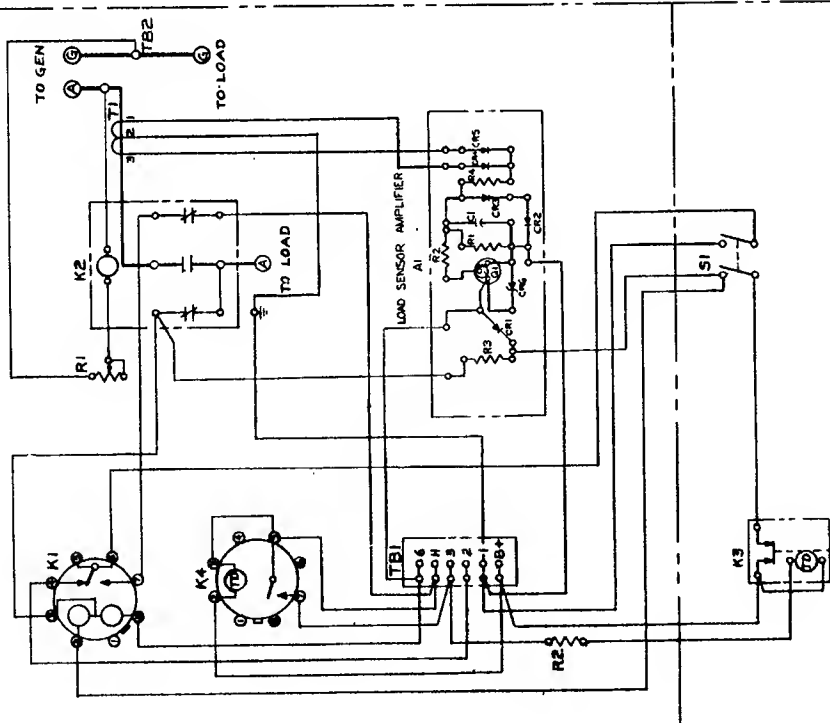
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2). THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

REFDES	PART NO.	QTY	PARTS LIST
A1	300B443	1	AMPLIFIER ASSY-LOAD SENSOR
	312A932	1	BOARD-INSULATING
K1	307A62	1	RELAY-START RUN
	312P380	1	SOCKET
K2	307C64	1	CONTACTOR
	306C015	1	CAUTION LABEL
K3	320B104	1	RELAY-CRANKING LIMITER
R1	304A131	1	RESISTOR,750-OHM,25W
K2	304A132	1	RESISTOR,3-OHM,10W
S2	308P88	1	SWITCH-AUTO MANUAL
T1	315A241	1	TRANS-ASSY-CURRENT
TB1	332A639	1	BLOCK-TERMINAL
	98A1927	1	SILK SCREEN
TB2	332-517	2	TERMINAL-GROUND
	301D2573	1	CONTROL BOX
	98C1815	1	SILK SCREEN
	98A1928	1	SILK SCREEN
	301B5864	1	TRIM
	518P237	3	FASTENER-TRIM
	815-178	1	SCREW-HEX HD #6-32X1/4LG
	850-30	1	LOCKWASHER #10
	29A966	1	NAMEPLATE-CONTROL
			567C95

7.5HA-22/1B

C	WAS 323P2 SOCKET	34	11-5-67
B	ADDED NOTES 2 & 3	35	10-31-67
A	ORDER LABEL 98-2043	36	10-31-67
	2-22-68	37	10-31-67
	2-22-68	38	10-31-67
	2-22-68	39	10-31-67
	2-22-68	40	10-31-67
	2-22-68	41	10-31-67
	2-22-68	42	10-31-67
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	2-22-68	45	10-31-67
	2-22-68	46	10-31-67
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	2-22-68	49	10-31-67
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	2-22-68	90	10-31-67
	2-22-68	91	10-31-67
	2-22-68	92	10-31-67
	2-22-68	93	10-31-67
	2-22-68	94	10-31-67
	2-22-68	95	10-31-67
	2-22-68	96	10-31-67
	2-22-68	97	10-31-67
	2-22-68	98	10-31-67
	2-22-68	99	10-31-67
	2-22-68	100	10-31-67

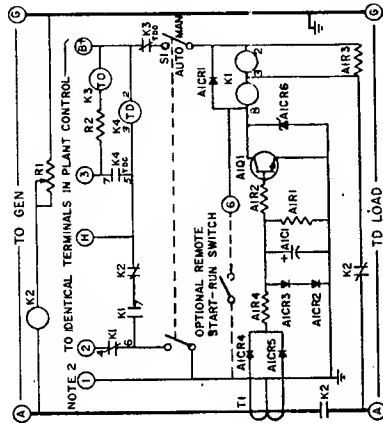
FRONT VIEW OF CHASSIS



1. - OPERATE WITH NEGATIVE GROUND ONLY

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2). THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

©



PARTS LIST	
	DESCRIPTION

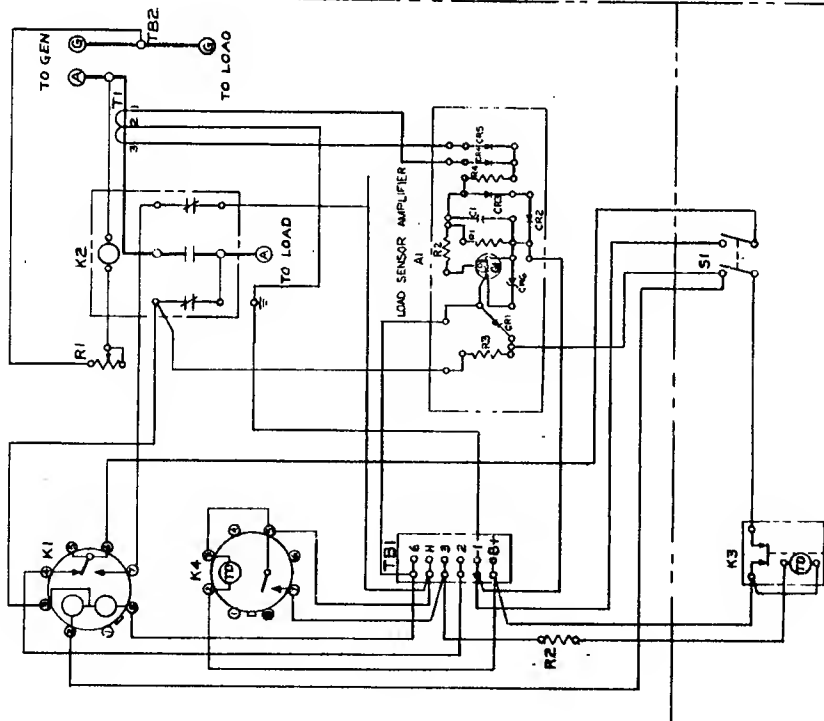
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7.5HA-22/10B

D	WAS 323PSE SOCKET	77	11-9-67
C	" "	78	11-9-67
B	MEDDED NOTES 2 & 3	79	10-31-67
A	ADDED LABEL REAR CASE	80	10-31-67
	SERIAL NO. - SAVE IN DATED 8-23-68		
	SERIAL NO. - SAVE IN DATED 8-23-68		
UNIT	REVISION	DATE	NAME
Osgon DIVISION OF THOMSON CORPORATION <small>Manufactured in Germany</small>			
RATE	UNIT	DATE	NAME
- C.A. -	CDN	JUN 14-67	W.B.
SCHEMATIC WIRING DIAGRAM			
AUTOMATIC DEMAND CONTROL			
UNIT NO	617C96		
240V, 1 PH., 2W, 50/60CY.			
7.5HA-22/10B			
12 VOLT CRANKING			

617C97

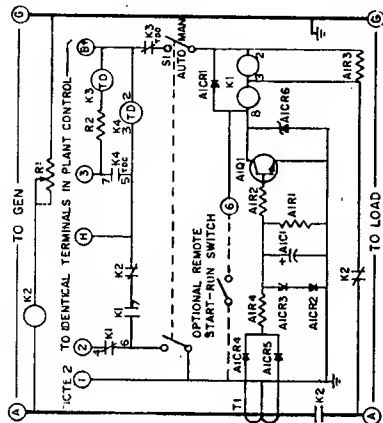
WIRING DIAGRAM
FRONT VIEW OF CHASSIS



NOTE:

- 1 - OPERATE WITH NEGATIVE GROUND ONLY
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER

SCHEMATIC



REFDES	PART NO.	QTY	DESCRIPTION
A1	300B443	1	AMPLIFIER ASSY-LOAD SENSOR
K1	307A932	1	BOARD-INSULATING
K2	307A932	1	RELAY-START RUN
K3	307A932	1	CONTACTOR
K4	307A932	1	TERMINAL
R1	307A932	1	RESISTOR-750-OHM, 25W
R2	307A932	1	RESISTOR-3-OHM, 10W
T1	307A932	1	TRANS-AUTO-MANUAL
TB1	307A932	1	BLOCK-TERMINAL
TB2	307A932	1	SILK SCREEN
	307A932	1	TERMINAL-GROUND
	307A932	1	CONTROL BOX
	307A932	1	SILK SCREEN
	307A932	1	SILK SCREEN
	307A932	1	TRIM
	307A932	1	FASTENER-TRIM
	307A932	1	SCREW-HEX-ADP-32X3/8LG
	307A932	1	LOCKWASHER #10
	307A932	1	NAMEPLATE-CONTROL

7.5HA-22/12B

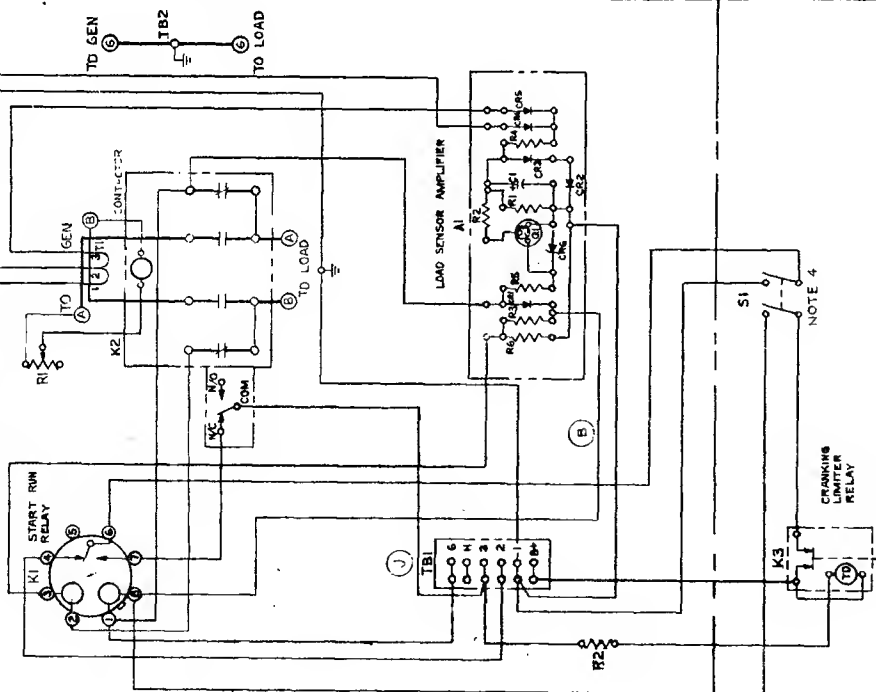
7.5HA-22/12B
12 VOLT CRANKING
240V, 1PH,
2W, 50/60CY

617C97

SCHEMATIC & WIRING DIAGRAM
AUTOMATIC DEMAND CONTROL

617C97

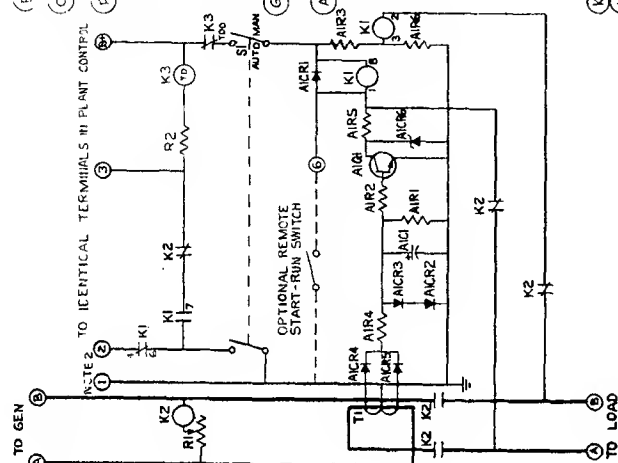
617C102

WIRING DIAGRAM
FRONT VIEW OF CHASSIS

REAR VIEW OF DOOR

- (H) 4. MOUNT SWITCH WITH FINISHING NUT ON THE FRONT PANEL.
- (D) 3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
- NOTE: 1- OPERATE WITH NEGATIVE GROUND ONLY

SCHEMATIC



PARTS LIST

REF DES	PART NO	QTY	DESCRIPTION
A1	300B463	1	AMPLIFIER ASSY - LOAD SENSOR
	332A132	1	BOARD - INSULATING
K1	307A858	1	RELAY - START RUN
	323P150	1	SOCKET
K2	307C664	1	CONTACTOR
	98A2085	1	AUTOMATION LABEL
	160-144	2	STRAP
	332-117	4	TERMINAL
	309A442	1	SWITCH - AUX
	309A193	1	INSULATOR
K3	320B104	1	RELAY - CRANKING LIMITER
R1	304A131	1	RESISTOR, 750 OHM, 25W
R2	304A132	1	RESISTOR, 3 OHM, 10W
S1	308P88	1	SWITCH - AUTO MANUAL
T1	315A231	1	TRANS. ASSY - CURRENT
T2	332A659	1	BLOCK - TERMINAL
	98A1927	1	SILK SCREEN
TB2	332-517	2	TERMINAL - GROUND
	301D2573	1	CONTROL BOX
	98A1915	1	SILK SCREEN
	98A1915	1	SILK SCREEN
	301B2386	1	TRIM
	518P237	3	FASTENER - TRIM
	858-1178	1	SCREW - HEX NO 10-32 X 5/8 LG
	858-30	1	LOCKWASHER NO
	59A966	1	NAMEPLATE - CONTROL
	334A1890	25FT	WIRE-FLEXIBLE NO.20 AWG
	334A1842	12FT	WIRE-FLEXIBLE NO.16 AWG

7.5HA-23/1B

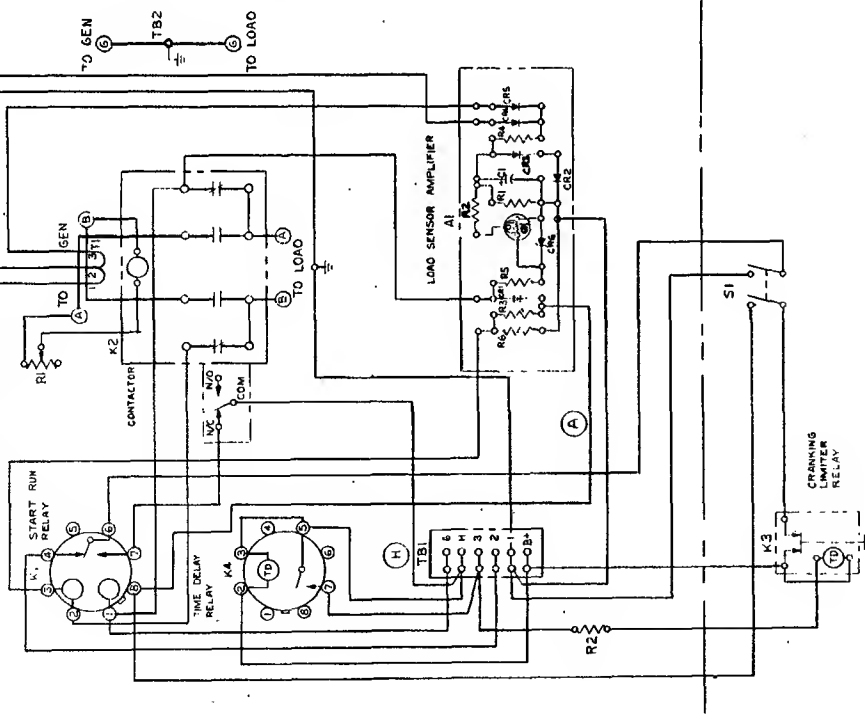
L	ADDED WIRE NO 334A1842 12FT	NO 16 AWG	3-14-69
K	"	"	"
J	REV WIRING TERMINAL 6	12V	10-24-68
H	ADDED NOTE 4	2V	11-13-67
G	WAS 315A233	2V	11-13-67
F	307A969 PARTO REMOVED	2V	11-13-67
E	WAS 323P152 SOCKET	2V	11-9-67
D	ADDED NOTES 2 & 3	2V	11-1-67
C	ADDED LABEL 98A2085	2V	11-1-67
B	MOVED LEAD 51 TO K1	2V	10-27-67
A	WAS 332-142	2V	10-27-67
REV	REVISION	2V	10-27-67
DATE	DATE	2V	10-27-67

7.5HA-23/1B	12-29-66	CDR	12V	11-13-67
12 VOLT CRANKING	12V	11-13-67	12V	11-13-67
120/240 V, 1PH, 3 WIRE, 50/60 CY	12V	11-13-67	12V	11-13-67
617C102	12V	11-13-67	12V	11-13-67

617C101

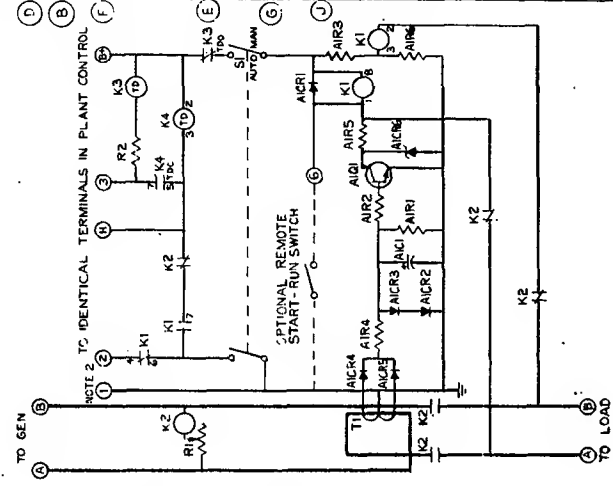
WIRING DIAGRAM

FRONT VIEW OF CHASSIS



REAR VIEW OF DOOR

SCHEMATIC



PARTS LIST

REFDES	PART NO	QTY	DESCRIPTION
A1	302463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	302432	1	BOARD - INSULATING
K2	3074658	1	RELAY - START RUN
K3	323P380	1	SOCKET
K4	3074666	1	CONTACTOR
R1	3074666	1	CAUTION LABEL
R2	160-144	2	STRAP
T1	332-517	4	TERMINAL
T2	309442	1	SWITCH - AUX
T3	3094193	1	INSULATOR
T4	3208104	1	RELAY - CRANKING LIMITER
T5	3074645	1	RELAY - TIME DELAY, PREHEAT (20S)
T6	323P380	1	SOCKET
T7	3044131	1	RESISTOR, 750 OHM, 25W
T8	3044192	1	RESISTOR, 3 OHM, 10W
T9	308PBB	1	SWITCH - AUTO MANUAL
T10	3154291	1	TRANS. ASSY - CURRENT
T11	3324699	1	BLOCK - TERMINAL
T12	98A1927	1	SILK SCREEN
T13	332-517	2	TERMINAL - GROUND
T14	301D2573	1	CONTROL BOX
T15	98C1815	1	SILK SCREEN
T16	98A1949	1	TRIM
T17	301B2586	1	TRIM
T18	51B2537	3	FASTENER - TRIM
T19	615-178	1	SCREW - HEX HD #10-32 X 5/8 LG
T20	650-30	1	LOCKWASHER #10
T21	99A966	1	NAMEPLATE - CONTROL
T22	101519	1	

7.5HA-23/10B

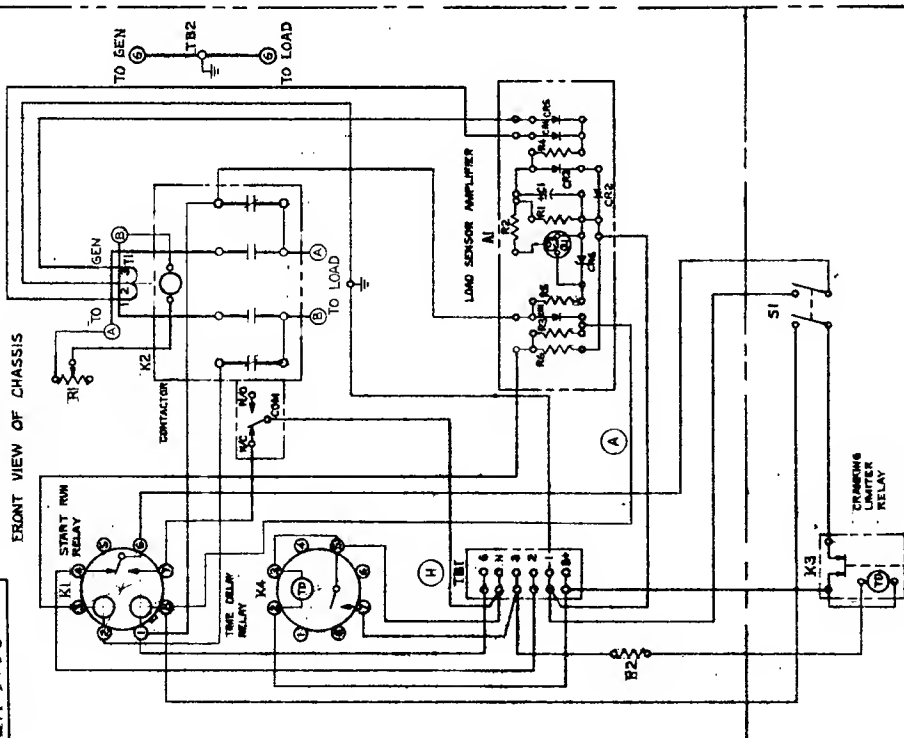
1. IF 2 WAS 332-142	2-20-66
2. IF 2 WAS 332-142	2-20-66
3. IF 2 WAS 332-142	2-20-66
4. IF 2 WAS 332-142	2-20-66
5. IF 2 WAS 332-142	2-20-66
6. IF 2 WAS 332-142	2-20-66
7. IF 2 WAS 332-142	2-20-66
8. IF 2 WAS 332-142	2-20-66
9. IF 2 WAS 332-142	2-20-66
10. IF 2 WAS 332-142	2-20-66
11. IF 2 WAS 332-142	2-20-66
12. IF 2 WAS 332-142	2-20-66
13. IF 2 WAS 332-142	2-20-66
14. IF 2 WAS 332-142	2-20-66
15. IF 2 WAS 332-142	2-20-66
16. IF 2 WAS 332-142	2-20-66
17. IF 2 WAS 332-142	2-20-66
18. IF 2 WAS 332-142	2-20-66
19. IF 2 WAS 332-142	2-20-66
20. IF 2 WAS 332-142	2-20-66
21. IF 2 WAS 332-142	2-20-66
22. IF 2 WAS 332-142	2-20-66
23. IF 2 WAS 332-142	2-20-66
24. IF 2 WAS 332-142	2-20-66
25. IF 2 WAS 332-142	2-20-66
26. IF 2 WAS 332-142	2-20-66
27. IF 2 WAS 332-142	2-20-66
28. IF 2 WAS 332-142	2-20-66
29. IF 2 WAS 332-142	2-20-66
30. IF 2 WAS 332-142	2-20-66
31. IF 2 WAS 332-142	2-20-66
32. IF 2 WAS 332-142	2-20-66
33. IF 2 WAS 332-142	2-20-66
34. IF 2 WAS 332-142	2-20-66
35. IF 2 WAS 332-142	2-20-66
36. IF 2 WAS 332-142	2-20-66
37. IF 2 WAS 332-142	2-20-66
38. IF 2 WAS 332-142	2-20-66
39. IF 2 WAS 332-142	2-20-66
40. IF 2 WAS 332-142	2-20-66
41. IF 2 WAS 332-142	2-20-66
42. IF 2 WAS 332-142	2-20-66
43. IF 2 WAS 332-142	2-20-66
44. IF 2 WAS 332-142	2-20-66
45. IF 2 WAS 332-142	2-20-66
46. IF 2 WAS 332-142	2-20-66
47. IF 2 WAS 332-142	2-20-66
48. IF 2 WAS 332-142	2-20-66
49. IF 2 WAS 332-142	2-20-66
50. IF 2 WAS 332-142	2-20-66
51. IF 2 WAS 332-142	2-20-66
52. IF 2 WAS 332-142	2-20-66
53. IF 2 WAS 332-142	2-20-66
54. IF 2 WAS 332-142	2-20-66
55. IF 2 WAS 332-142	2-20-66
56. IF 2 WAS 332-142	2-20-66
57. IF 2 WAS 332-142	2-20-66
58. IF 2 WAS 332-142	2-20-66
59. IF 2 WAS 332-142	2-20-66
60. IF 2 WAS 332-142	2-20-66
61. IF 2 WAS 332-142	2-20-66
62. IF 2 WAS 332-142	2-20-66
63. IF 2 WAS 332-142	2-20-66
64. IF 2 WAS 332-142	2-20-66
65. IF 2 WAS 332-142	2-20-66
66. IF 2 WAS 332-142	2-20-66
67. IF 2 WAS 332-142	2-20-66
68. IF 2 WAS 332-142	2-20-66
69. IF 2 WAS 332-142	2-20-66
70. IF 2 WAS 332-142	2-20-66
71. IF 2 WAS 332-142	2-20-66
72. IF 2 WAS 332-142	2-20-66
73. IF 2 WAS 332-142	2-20-66
74. IF 2 WAS 332-142	2-20-66
75. IF 2 WAS 332-142	2-20-66
76. IF 2 WAS 332-142	2-20-66
77. IF 2 WAS 332-142	2-20-66
78. IF 2 WAS 332-142	2-20-66
79. IF 2 WAS 332-142	2-20-66
80. IF 2 WAS 332-142	2-20-66
81. IF 2 WAS 332-142	2-20-66
82. IF 2 WAS 332-142	2-20-66
83. IF 2 WAS 332-142	2-20-66
84. IF 2 WAS 332-142	2-20-66
85. IF 2 WAS 332-142	2-20-66
86. IF 2 WAS 332-142	2-20-66
87. IF 2 WAS 332-142	2-20-66
88. IF 2 WAS 332-142	2-20-66
89. IF 2 WAS 332-142	2-20-66
90. IF 2 WAS 332-142	2-20-66
91. IF 2 WAS 332-142	2-20-66
92. IF 2 WAS 332-142	2-20-66
93. IF 2 WAS 332-142	2-20-66
94. IF 2 WAS 332-142	2-20-66
95. IF 2 WAS 332-142	2-20-66
96. IF 2 WAS 332-142	2-20-66
97. IF 2 WAS 332-142	2-20-66
98. IF 2 WAS 332-142	2-20-66
99. IF 2 WAS 332-142	2-20-66
100. IF 2 WAS 332-142	2-20-66

- 3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
 - 2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD
- NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

617C103

WIRING DIAGRAM

FRONT VIEW OF CHASSIS

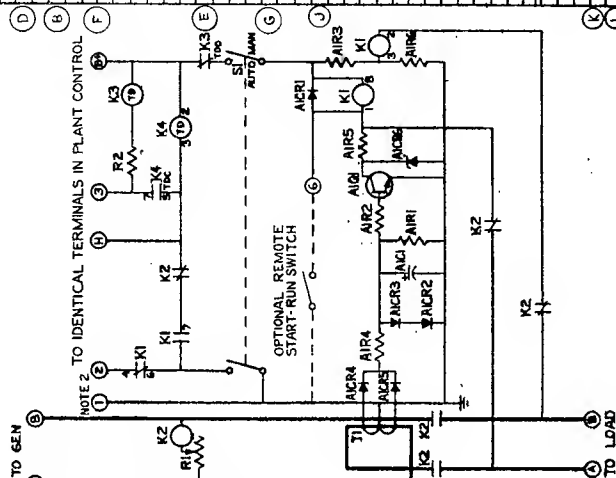


REAR VIEW OF DOOR

3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

SCHEMATIC



PARTS LIST

REF DES	PART NO	QTY	DESCRIPTION
A1	300B463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	332A932	1	BOARD - INSULATING
K2	307A858	1	RELAY - START RUN
K3	323P380	1	SOCKET
K4	307C666	1	CONTACTOR
K5	98A2045	1	CAUTION LABEL
K6	160-144	2	STRAP
K7	332-517	4	TERMINAL
K8	309A42	1	SWITCH - AUX
K9	309A183	1	INSULATOR
K10	320B104	1	RELAY - CRANKING LIMITER
K11	307A689	1	RELAY - TIME DELAY, PREHEAT
K12	323P380	1	SOCKET
K13	304A131	1	RESISTOR, 750 OHM, 25W
K14	304A192	1	RESISTOR, 3 OHM, 10W
K15	308P88	1	SWITCH - AUTO MANUAL
K16	315A291	1	TRANS. ASSY - CURRENT
K17	332A699	1	BLOCK - TERMINAL
K18	98A1927	1	SILK SCREEN
K19	332-517	2	TERMINAL - GROUND
K20	301D2573	1	CONTROL BOX
K21	98A1815	1	SILK SCREEN
K22	98A1949	1	SILK SCREEN
K23	301B2586	1	TRIM
K24	518P237	3	FASTENER - TRIM
K25	415-178	1	SCREW - HEX NO. 10-32 X 5/8 LS
K26	850-20	1	LOCKWASHER, NO
K27	98A866	1	NAMEPLATE - CONTROL
K28	334A1890	25FT	WIRE-FLEXIBLE NO.20AWG
K29	334A1842	1FT	WIRE-FLEXIBLE NO.10AWG

7.5HA-23/12B

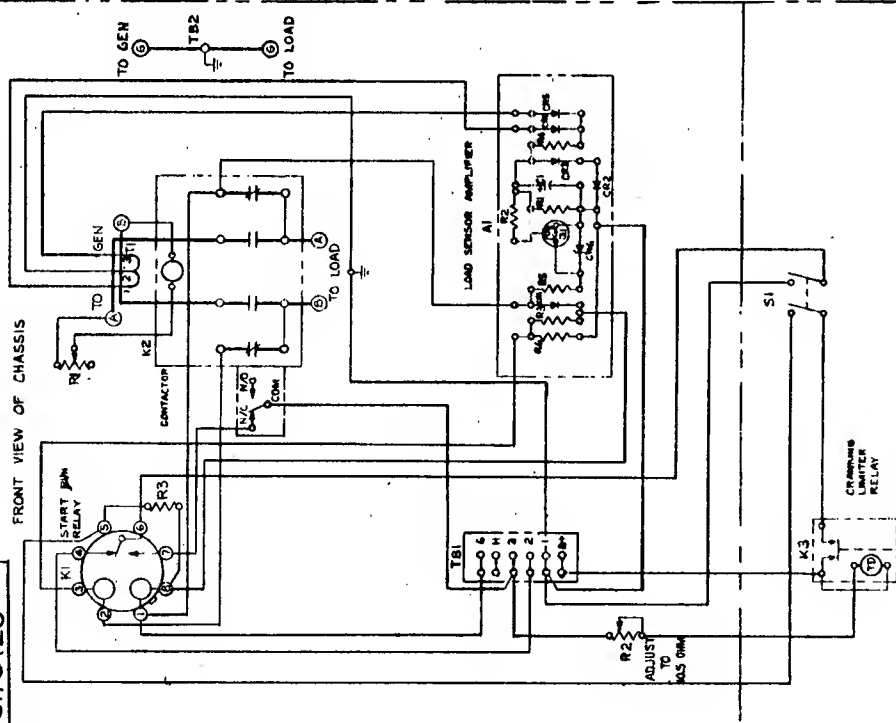
L1	WAS N#10	7-9-69
K	WAS N#12	7-9-69
L	ADDED WIRE NO.334A1842	7-9-69
K	" " " 334A1890	7-9-69
J	TB2 WAS 332-142	7-9-69
H	REV. WIRING TERMINAL 6	7-9-69
G	ADDED 315A291	7-9-69
F	REV.309A830A970 & 315A291	7-9-69
E	WAS 323P52 SOCKET	7-9-69
D	" " "	7-9-69
C	ADDED NOTES 2 & 3	7-9-69
B	ADDED LABEL 98A2045	7-9-69
A	ADDED LEAD S1 TO K1	7-9-69
101	VERSION	7-9-69
102	BY/CHK OF INVENTOR/CONTR	7-9-69
103	DATE	7-9-69

7.5HA-23/12B	12-29-66	CDR	WJB
12 VOLT CRANKING			
120/240 V, 1PH, 3 WIRE, 50/60 CY			
617C103			

617C128

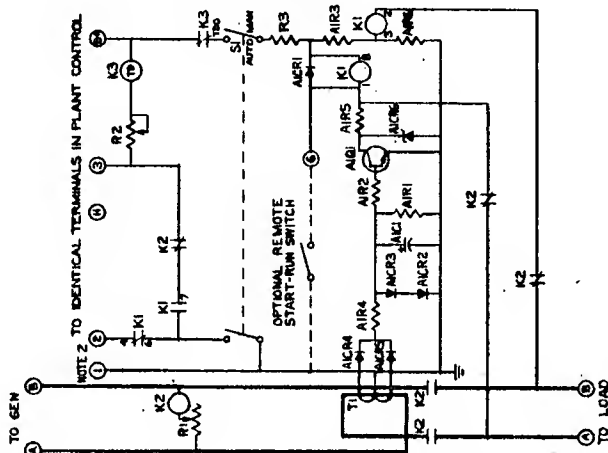
WIRING DIAGRAM

FRONT VIEW OF CHASSIS



REAR VIEW OF DOOR

SCHEMATIC



PARTS LIST

REFDES	PART NO	QTY	DESCRIPTION
A1	300B463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	332A932	1	BOARD - INSULATING
K1	307A858	1	RELAY - START RUN
K2	323P321	1	SOCKET
K2	307C666	1	CONTACTOR
	98A2045	1	CAUTION LABEL
	160-144	2	STRAP
	332-517	4	TERMINAL
	309A42	1	SWITCH - AUX
	309A183	1	INSULATOR
K3	320B104	1	RELAY - CRANKING LIMITER
R1	304A131	1	RESISTOR, 750 OHM, 25 W
R2	304A222	1	RESISTOR, 15 OHM, 50 W
S1	308P88	1	SWITCH - AUTO MANUAL
T1	313A291	1	TRANS. ASSY - CURRENT
T1	332A659	1	ELECT. - TERMINAL
	98A1327	1	SILK SCREEN
TB2	332-142	2	TERMINAL - GROUND
R3	350-984	1	RESISTOR, 750 OHM, 2 W
	301D2573	1	CONTROL BOX
	98C1815	1	SILK SCREEN
	98A1949	1	SILK SCREEN
	301B3586	1	TRIM
	518P237	5	FASTENER - TRIM
	115-178	1	SCREW - 1/4" X 10-32 X 5/8 L.S.
	155-30	1	LOCKWASHER - C
	99A886	1	NAMEPLATE - CONTROL
	617C126		
	334A1537	1	32 VOLT CRANKING
	332-804	1	TERMINAL - 1/2"
	332-802	2	TERMINAL - 1/2"
	332-803	2	TERMINAL - 1/2"
	B50-11	1	20 SOLDER WIRE #16 RESIN CORE

7.5HA-23-4/1B

- CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
- IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

DATE	REV	BY	CHK
REVISION OF PREVIOUS EDITION			
7.5HA-23-4/1B			
SCHEMATIC & WIRING DIAGRAM			
AUTOMATIC DEMAND CONTROL			
617C128			

7.5HA-23-4/1B
32 VOLT CRANKING
120/240 V, 1PH,
3 WIRE, 50/60 CY

NOTE:
UNLESS OTHERWISE NOTED, ALL
COMPONENTS ARE SHOWN IN THE
DE-ENERGIZED POSITION.



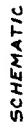
7.5HA-23-4/10B

Con

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

50

FRONT VIEW OF CHASSIS



862419

15:0HA-22/10B

CCC

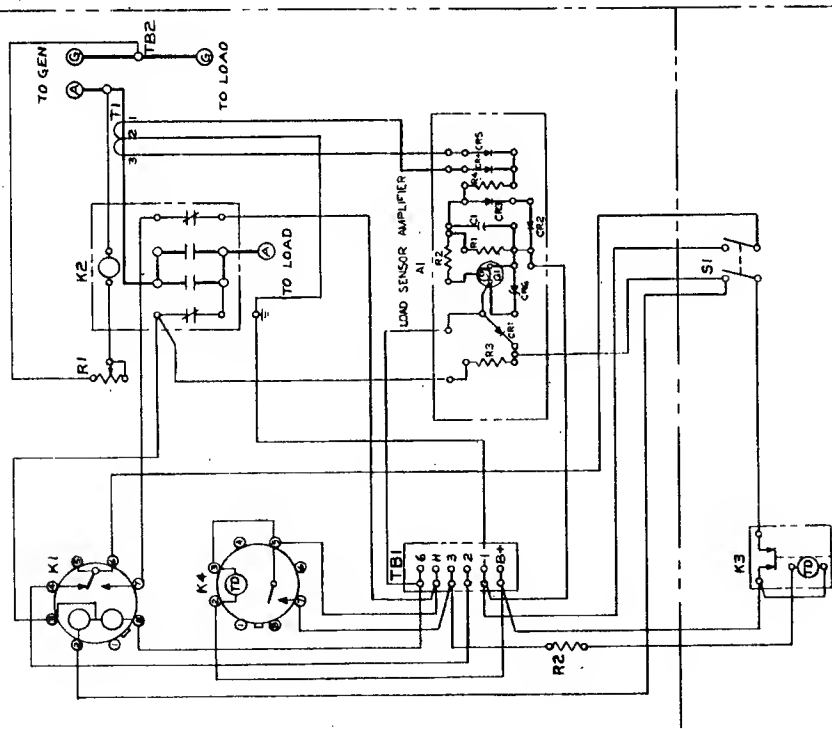
15.0NA-22/10B
12 VOLT CRANKING
240V., 1 PH.,
2W. 50/60CY

U - OPERATE WITH NEGATIVE GROUND ONLY

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LDAO SENSOR AMPLIFIER.

FRONT VIEW OF CHASSIS

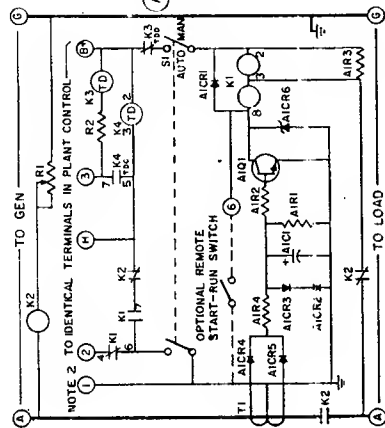


1 - OPERATE WITH NEGATIVE GROUND ONLY

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2). THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

SCHEMATIC



15.0HA-22/12B

D	MKS 323B52 SOCKET	IN 19-66
E	ADDED NOTES 2 & 3	IN 19-67
F	BADDLED LABEL BR40AS	IN 11-67
G	SHEETS - AG SAME AS DATED 5-23-66	DATE
H	BY:	DATE
I	REVIEW	DATE

Oregon

DIVISION OF TURBOFARM CORPORATION
Manufacturing Department

ENT	NO.	TOL	COR.	NO.	X-LIB.
1	2	3	4	5	6

SCHEMATIC WIRING DIAGRAM

AUTOMATIC DEMAND CONTROL

SPMS NO

617C99

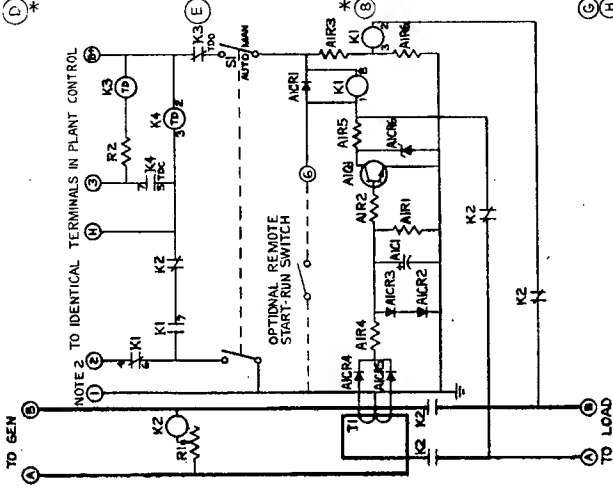
150A-22/12B

12 VOLT CRANKING

240V., 1 PH.,

2W., 50/60CY.

SCHEMATIC



REFS	PART NO	QTY	PARTS LIST
AL	302A463	1	AMPLIFIER ASSY - LOAD SENSOR
	302A482	1	BOARD - INSULATING
KI	307A856	1	RELAY - START RUN
	323P-380	1	SOCKET
K2	307A668	1	CONTACTOR
	307A685	4	JUMPER
	160-144	2	STRAP
	307A942	2	BUS BAR
	332-142	4	SLEETING 1 3/4" OF (69B-22)
	305A412	1	TERMINAL
	305A193	1	SWITCH - AUX
K3	320B104	1	INSULATOR
K4	307A645	1	RELAY - CRANKING LIMITER
	323P-380	1	RELAY - TIME DELAY, PREHEAT (20S)
R1	304A131	1	SOCKET
R2	304A192	1	RESISTORS, 750 OHM, 25W
SI	308P68	1	RESISTOR, 3 OHM, 10W
TI	315A233	1	SWITCH - AUTO MANUAL
TBI	332A659	1	TRANS. ASSY - CURRENT
TB2	96A1927	1	ELECTRIC MOTOR
	332-142	2	BLOCK - TERMINAL
	96A1927	1	SILK SCREEN
	98A2045	1	CAUTION LABEL
	301D2S73	1	CONTROL BOX
	96C1815	1	SILK SCREEN
	98A1949	1	SILK SCREEN
	301B2586	1	TRIM
	516P237	3	FASTENER - TRIM
	815-178	1	SCREW - HEX M10-32 x 5/8 LG
	850-30	1	LOCKWASHER #10
	99A966	1	NAMEPLATE - CONTROL
	334AB90	25 FT	WIRE-FLEXIBLE NO. 20 AWG
	334AB42	12 FT	WIRE-FLEXIBLE NO. 16 AWG
			501C7419

15.0HA-23/10B

H	ADDED WIRE NO 33A14B4B IV	3-14-69
G	ADDED WIRE NO 33A14B3C IV	3-14-69
F	REMOVED WIRE TERMINAL 6	3-14-68
E	WAS 332P55 SOCKET	3V 11-9-67
D	" "	3V 11-9-67
C	CANDED NOTES 2 & 3	11-1-67
B	SHOULD LABEL 5B40C5	11-1-67
A	MOVED LEAD SI TO KIT	3V 7-25-67
LET	REVISION	DATE

Origin

DIVISION OF STORMAGE CORPORATION

DATE	TIME	BY
3-29-66	CDR	WJH
SCHEMATIC & WIRING DIAGRAM		
AUTOMATIC DEMAND CONTROL		
617C105		
SPEC. NO.		

3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

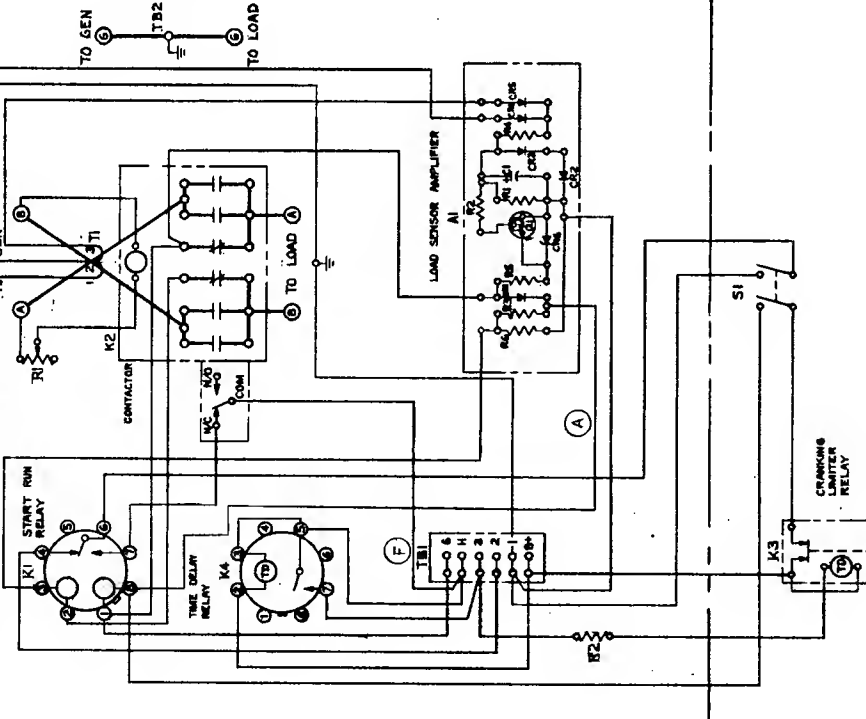
(C)

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

617C104

WIRING DIAGRAM

FRONT VIEW OF CHASSIS

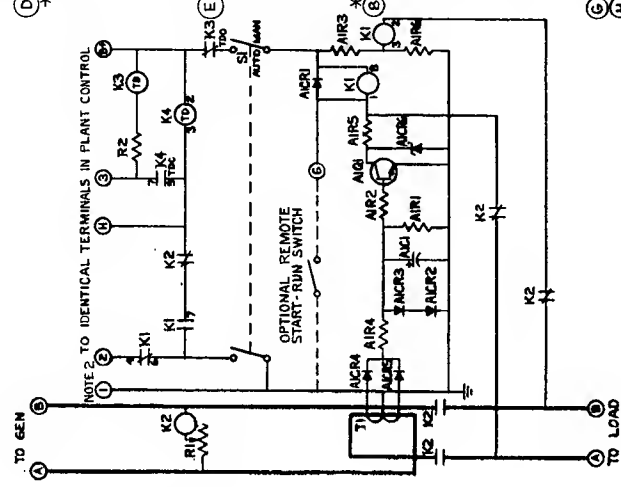


REAR VIEW OF DOOR

3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

SCHEMATIC



PARTS LIST

REFDES	PART NO.	QTY	DESCRIPTION
A1	300B463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	332A832	1	BOARD - INSULATING
K2	307A858	1	RELAY - START RUN
K3	323P380	1	SOCKET
K4	307C667	1	CONTACTOR
	307A685	4	JUMPER
	160-144	2	STRAP
	307A942	2	BUS BAR
	332-142	4	TERMINAL 1 3/4" OF (838-22)
	305A193	1	INSULATOR
K3	320B104	1	RELAY - CRANKING LIMITER
K4	307A685	1	RELAY - TIME DELAY, PREHEAT (5)
R1	323P380	1	SOCKET
R2	304A131	1	RESISTOR, 750 OHM, 25W
R3	304A192	1	RESISTOR, 3 OHM, 10W
S1	308P08	1	SWITCH - AUTO MANUAL
T1	318A233	1	TRANS. ASSY - CURRENT
T2	332A639	1	BLOCK - TERMINAL
T3	98A1927	1	SILK SCREEN
T4	332-142	2	TERMINAL - GROUND
	98A2045	1	CAUTION LABEL
	301D573	1	CONTROL BOX
	98A1815	1	SILK SCREEN
	98A1945	1	SILK SCREEN
	301B2566	1	TRIM
	518P237	3	FASTENER - TRIM
	815-178	1	SCREW - NET NO 40-32 X 5/8 LG
	850-30	1	LOCKWASHER #40
	99A966	1	NAMEPLATE - CONTROL
			401C119
	334A1850	25	WIRE-FLEXIBLE NO. 20 AWG
	334A1842	12	WIRE-FLEXIBLE NO. 16 AWG

15.0HA-23/12B

H	ADDED WIRE NO 334A1842	25	3-14-69
G	ADDED WIRE NO 334A1850	25	3-14-69
F	REV. WIRING TERMINAL 5	25	1-24-68
E	WAS 323P52 SOCKET	25	11-9-67
D	"	25	11-9-67
C	ADDED NOTES 2 & 3	25	11-11-67
B	ADDED LABEL 98A2045	25	11-11-67
A	MOVED LEAD S1 TO K1	25	7-25-67
REV	BY	CHK	DATE

Original

15.0 HA -23/12B CDR

SCHEMATIC & WIRING DIAGRAM

AUTOMATIC DEMAND CONTROL

617C104

15.0 HA -23/12B

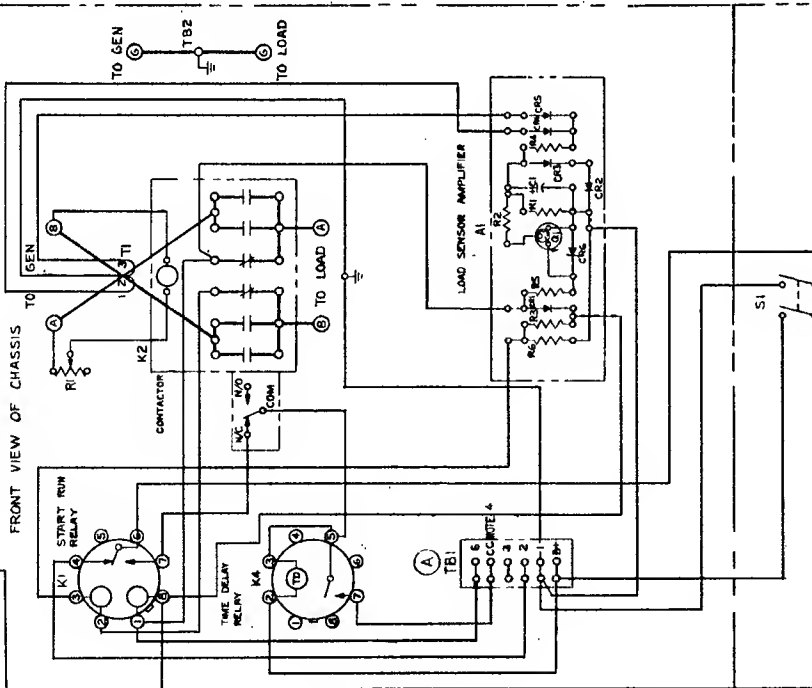
12 VOLT CRANKING

120/240 V, 1 PH, 3 WIRE, 50/60 CY

617C116

WIRING DIAGRAM

FRONT VIEW OF CHASSIS



REAR VIEW OF DOOR

7. USE WITH TYPE III CYCLE CRANKER WD. 625B224

6. ON SILKSCREEN 98C1815, PAINT GREEN OVER "CRANKING LIMITER" & "RESET AFTER 1 MINUTE"

5. PASTE PRINT OF SCHEMATIC INSIDE COVER OF CONTROL BOX

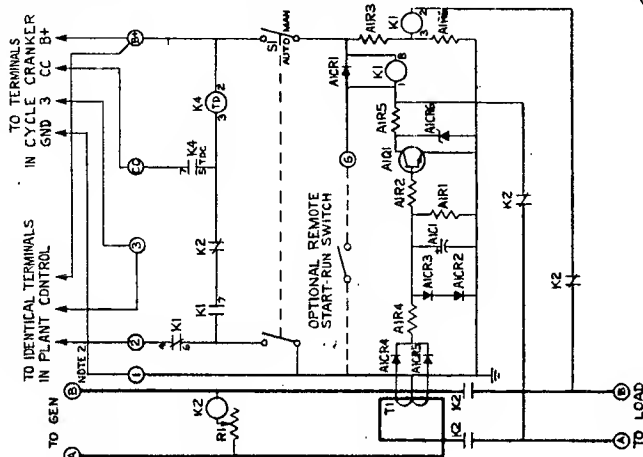
4. BESIDE TB1, STAMP CC IN PLACE OF H

3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

SCHEMATIC



NOTE: UNLESS OTHERWISE NOTED, ALL COMPONENTS ARE SHOWN IN THE DE-ENERGIZED POSITION.

PARTS LIST

REFDES	PART NO	QTY	DESCRIPTION
A1	3070A463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	307A858	1	BOARD - INSULATING
K2	307A858	1	RELAY - START RUN
K3	307A858	1	SOCKET
K4	307A858	1	CONTACTOR
K5	307A858	1	JUMPER
K6	160-144	2	STRAP
K7	307A858	1	BUS BAR
K8	307A858	1	SLIDING 1 3/4" OF (858-22)
K9	307A858	1	SWITCH - AUT
K10	307A858	1	INSULATOR
K11	307A858	1	RELAY - TIME DELAY, PREHEAT (S)
K12	307A858	1	SOCKET
K13	307A858	1	RESISTOR, 750 OHM, 25W
K14	307A858	1	SWITCH - AUTO MANUAL
K15	307A858	1	MANUAL ASSEMBLY CURRENT
K16	307A858	1	LOCK - TERMINAL
K17	307A858	1	SILK SCREEN
K18	307A858	2	TERMINAL - GROUND
K19	307A858	1	CAUTION LABEL
K20	307A858	1	CONTROL BOX
K21	307A858	1	SILK SCREEN (NOTE 5)
K22	307A858	1	TRIM
K23	307A858	1	PASTENER - TRIM
K24	307A858	1	SCREW - HEX WD #10-32 X 5/8 LG
K25	307A858	1	LOCKWASHER - MC
K26	307A858	1	NAMEPLATE - CONTROL
K27	307A858	1	DOT BUTTON
K28	307A858	2	DOT BUTTON
K29	307A858	2	DOT BUTTON
K30	307A858	2	DOT BUTTON
K31	307A858	2	DOT BUTTON
K32	307A858	2	DOT BUTTON
K33	307A858	2	DOT BUTTON
K34	307A858	2	DOT BUTTON
K35	307A858	2	DOT BUTTON
K36	307A858	2	DOT BUTTON
K37	307A858	2	DOT BUTTON
K38	307A858	2	DOT BUTTON
K39	307A858	2	DOT BUTTON
K40	307A858	2	DOT BUTTON
K41	307A858	2	DOT BUTTON
K42	307A858	2	DOT BUTTON
K43	307A858	2	DOT BUTTON
K44	307A858	2	DOT BUTTON
K45	307A858	2	DOT BUTTON
K46	307A858	2	DOT BUTTON
K47	307A858	2	DOT BUTTON
K48	307A858	2	DOT BUTTON
K49	307A858	2	DOT BUTTON
K50	307A858	2	DOT BUTTON
K51	307A858	2	DOT BUTTON
K52	307A858	2	DOT BUTTON
K53	307A858	2	DOT BUTTON
K54	307A858	2	DOT BUTTON
K55	307A858	2	DOT BUTTON
K56	307A858	2	DOT BUTTON
K57	307A858	2	DOT BUTTON
K58	307A858	2	DOT BUTTON
K59	307A858	2	DOT BUTTON
K60	307A858	2	DOT BUTTON
K61	307A858	2	DOT BUTTON
K62	307A858	2	DOT BUTTON
K63	307A858	2	DOT BUTTON
K64	307A858	2	DOT BUTTON
K65	307A858	2	DOT BUTTON
K66	307A858	2	DOT BUTTON
K67	307A858	2	DOT BUTTON
K68	307A858	2	DOT BUTTON
K69	307A858	2	DOT BUTTON
K70	307A858	2	DOT BUTTON
K71	307A858	2	DOT BUTTON
K72	307A858	2	DOT BUTTON
K73	307A858	2	DOT BUTTON
K74	307A858	2	DOT BUTTON
K75	307A858	2	DOT BUTTON
K76	307A858	2	DOT BUTTON
K77	307A858	2	DOT BUTTON
K78	307A858	2	DOT BUTTON
K79	307A858	2	DOT BUTTON
K80	307A858	2	DOT BUTTON
K81	307A858	2	DOT BUTTON
K82	307A858	2	DOT BUTTON
K83	307A858	2	DOT BUTTON
K84	307A858	2	DOT BUTTON
K85	307A858	2	DOT BUTTON
K86	307A858	2	DOT BUTTON
K87	307A858	2	DOT BUTTON
K88	307A858	2	DOT BUTTON
K89	307A858	2	DOT BUTTON
K90	307A858	2	DOT BUTTON
K91	307A858	2	DOT BUTTON
K92	307A858	2	DOT BUTTON
K93	307A858	2	DOT BUTTON
K94	307A858	2	DOT BUTTON
K95	307A858	2	DOT BUTTON
K96	307A858	2	DOT BUTTON
K97	307A858	2	DOT BUTTON
K98	307A858	2	DOT BUTTON
K99	307A858	2	DOT BUTTON
K100	307A858	2	DOT BUTTON

15.0HA-23/15B

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

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120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

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120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

120/240 V, 1PH,

3 WIRE, 50/60 CY

15.0HA-23/15B

12 VOLT CRANKING

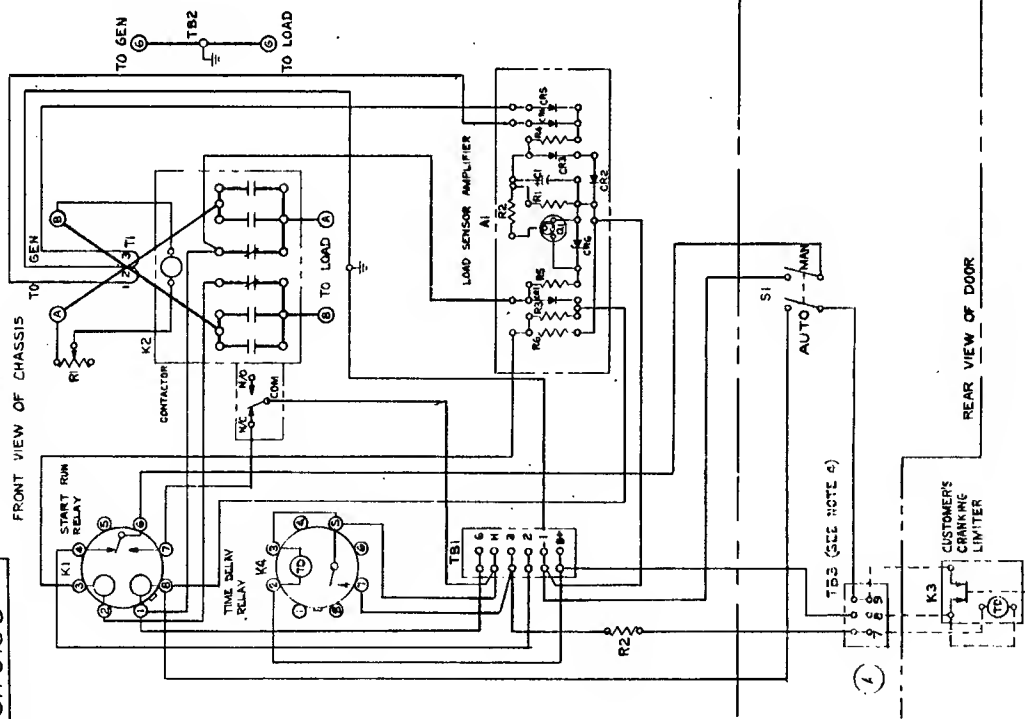
120/240 V, 1PH,

3 WIRE, 50/60 CY

617C130

WIRING DIAGRAM

FRONT VIEW OF CHASSIS

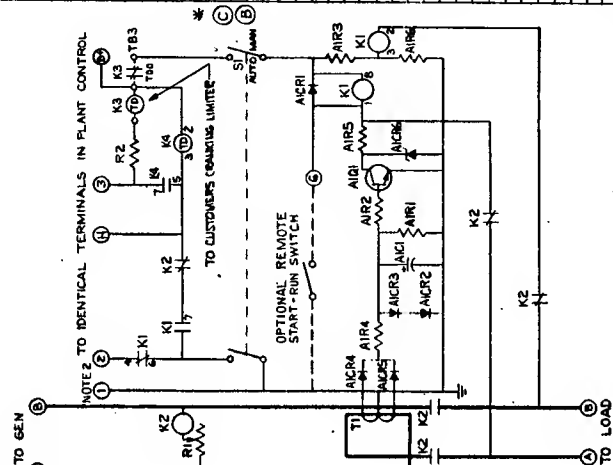


REAR VIEW OF DOOR

4. PAINT BACK OF MARKER STRIP WHITE, BEFORE MFG IT IN BOX
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN., BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

SCHEMATIC



PARTS LIST

REFDES	PART NO.	QTY	DESCRIPTION
A1	3008463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	332A932	1	BOARD - INSULATING
K2	307A858	1	RELAY - START RUN
K3	323P380	1	SOCKET
K4	307C667	1	CONTACTOR
K5	307A685	4	JUMPER
K6	160-144	2	STRAP
K7	307A942	2	BUS BAR
K8	332-142	4	TERMINAL
K9	309A442	1	SWITCH - AUX
K10	309A193	1	INSULATOR
K11	309A245	1	CAUTION LABEL
K12	320B04 (REF)	1	RELAY - CRANKING LIMITER
K13	304A131	1	RESISTOR 750 OHM, 25 W
K14	304A192	1	RESISTOR 2 OHM, 10 W
K15	308P88	1	SWITCH - AUTO MANUAL
K16	315A239	1	TRANS. ASSY - CURRENT
K17	332A699	1	BLOCK - TERMINAL
K18	98A1927	1	SILK SCREEN
K19	332-142	2	TERMINAL - GROUND
K20	332A611	1	BLOCK - TERMINAL
K21	332A612	1	STRIP - MARKER (SEE NOTE 1)
K22	301P2573	1	CONTROL BOX (VDDIF)
K23	98C1805	1	SILK SCREEN
K24	96A1949	1	SILK SCREEN
K25	301B2586	1	TRIM
K26	518P237	3	FASTENER - TRIM
K27	815-178	1	SCREW - HX HD #10-32 X 5/8 LG
K28	850-30	1	LOCKWASHER HD
K29	99A966	1	NAMEPLATE - CONTROL
K30	334A1890	25 FT	WIRE - FLEXIBLE NO. 20 SWG
K31	334A1842	12 FT	WIRE - FLEXIBLE NO. 16 SWG
K32	307A645	1	RELAY - TIME DELAY PREHEAT (25)
K33	323P380	1	SOCKET
K34	081D219		

15.0HA-23/17B

E	332P380	ADDED	25	2-6-70
D	332A645	ADDED	25	2-6-70
C	332A645	ADDED	25	2-6-70
B	332A645	ADDED	25	2-6-70
A	332A645	ADDED	25	2-6-70
1	332A645	ADDED	25	2-6-70
2	332A645	ADDED	25	2-6-70
3	332A645	ADDED	25	2-6-70
4	332A645	ADDED	25	2-6-70
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25	332A645	ADDED	25	2-6-70

Origin

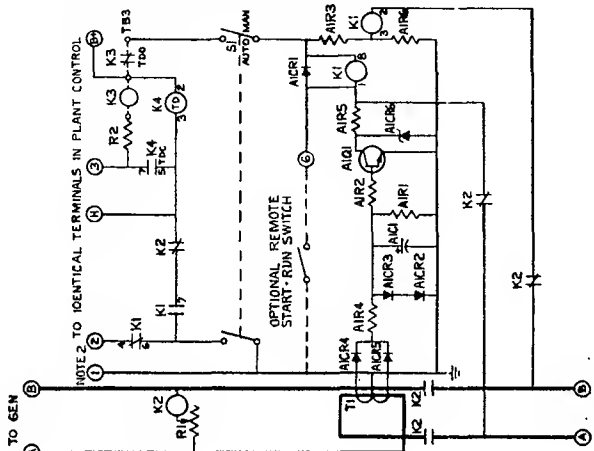
7-2-69

W. RING DIAGRAM

CONTROL - AUTOMATIC DEMAND

617C130

SCHEMATIC



15.0HA-23/18B

A		ADDED TERM BASEPINS ON 7-8-69		7-8-69		8-3-69	
IT	IT	IT	IT	IT	IT	IT	IT
DIVISION		DIVISION OF STANDARD CONSTRUCTION		DIVISION		DIVISION	
O		O		O		O	
COR		COR		COR		COR	
WIRING DIAGRAM		WIRING DIAGRAM		WIRING DIAGRAM		WIRING DIAGRAM	
CONTROL-AUTOMATIC DEMAND		CONTROL-AUTOMATIC DEMAND		CONTROL-AUTOMATIC DEMAND		CONTROL-AUTOMATIC DEMAND	
617C131		617C131		617C131		617C131	

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

**INDEX
FOR
SPEC C CONTROLS**

Find the appropriate model and proceed to the indicated page for the wiring diagram.

WATT RATING	MODEL	WIRING DIAGRAM	PAGE
7,500	7.5HA-21/1	617C132	61
	7.5HA-21/10	617C133	62
	7.5HA-21/12	617C133	62
	7.5HA-21-4/1	617C138	63
	7.5HA-21-4/10	617C139	64
	7.5HA-21-4/12	617C139	64
	7.5HA-23/1	617C140	65
	7.5HA-23/10	617C141	66
	7.5HA-23/12	617C141	66
	7.5HA-23-4/10	617C142	67
	7.5HA-23-4/12	617C142	67
15,000	15.0HA-22/1	617C134	68
	15.0HA-22/10	617C135	69
	15.0HA-22/12	617C135	69
	15.0HA-23/1	617C143	70
	15.0HA-23/10	617C144	71
	15.0HA-23/12	617C144	71
	15.0HA-23-4/10	617C145	72
	15.0HA-23-4/12	617C145	72

PRINTED CIRCUIT BOARDS

Individual components of the printed circuit boards are given on pages 73 and 74.

617C132

WIRING DIAGRAM
FRONT VIEW OF CHASSIS

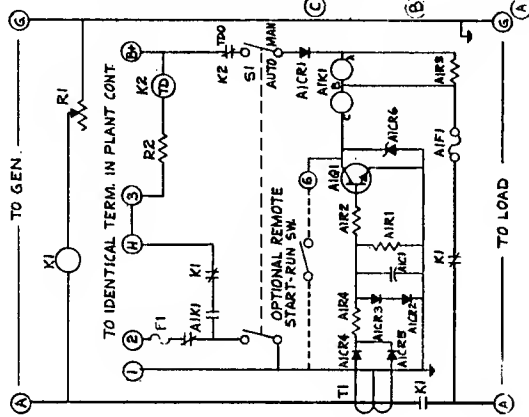
This wiring diagram illustrates the front view of a chassis, detailing the electrical connections between various components. The diagram is organized into several functional sections:

- Power Input Section (Top):** Features a power source labeled "TO GEN" connected to terminals M1, M2, and TB2. A switch K1 is connected to the M1/M2 line, and a fuse F1 is connected to the TB2 line. A "TO LOAD" connection is also shown.
- Central Component Section:** Contains a large assembly labeled A1, which includes a transformer with primary windings R1, R2, and R3, and secondary windings R4, R5, and R6. A capacitor C1 is connected to the secondary side. A switch K2 is connected to the primary side. A fuse F1 is connected to the secondary side. A terminal block TB1 is connected to the primary side.
- Control Section (Bottom):** Includes a switch K1, a fuse F1, and a terminal block TB1. A switch K2 is connected to the TB1 line, and a fuse F1 is connected to the TB2 line. A "TO LOAD" connection is also shown.
- Wiring Connections:** Numerous wires connect the components, with labels such as J1, J2, J3, J4, J5, J6, J7, J8, J9, J10, J11, J12, J13, J14, J15, J16, J17, J18, J19, J20, J21, J22, J23, J24, J25, J26, J27, J28, J29, J30, J31, J32, J33, J34, J35, J36, J37, J38, J39, J40, J41, J42, J43, J44, J45, J46, J47, J48, J49, J50, J51, J52, J53, J54, J55, J56, J57, J58, J59, J60, J61, J62, J63, J64, J65, J66, J67, J68, J69, J70, J71, J72, J73, J74, J75, J76, J77, J78, J79, J80, J81, J82, J83, J84, J85, J86, J87, J88, J89, J90, J91, J92, J93, J94, J95, J96, J97, J98, J99, J100, J101, J102, J103, J104, J105, J106, J107, J108, J109, J110, J111, J112, J113, J114, J115, J116, J117, J118, J119, J120, J121, J122, J123, J124, J125, J126, J127, J128, J129, J130, J131, J132, J133, J134, J135, J136, J137, J138, J139, J140, J141, J142, J143, J144, J145, J146, J147, J148, J149, J150, J151, J152, J153, J154, J155, J156, J157, J158, J159, J160, J161, J162, J163, J164, J165, J166, J167, J168, J169, J170, J171, J172, J173, J174, J175, J176, J177, J178, J179, J180, J181, J182, J183, J184, J185, J186, J187, J188, J189, J190, J191, J192, J193, J194, J195, J196, J197, J198, J199, J200, J201, J202, J203, J204, J205, J206, J207, J208, J209, J210, J211, J212, J213, J214, J215, J216, J217, J218, J219, J220, J221, J222, J223, J224, J225, J226, J227, J228, J229, J230, J231, J232, J233, J234, J235, J236, J237, J238, J239, J240, J241, J242, J243, J244, J245, J246, J247, J248, J249, J250, J251, J252, J253, J254, J255, J256, J257, J258, J259, J260, J261, J262, J263, J264, J265, J266, J267, J268, J269, J270, J271, J272, J273, J274, J275, J276, J277, J278, J279, J280, J281, J282, J283, J284, J285, J286, J287, J288, J289, J290, J291, J292, J293, J294, J295, J296, J297, J298, J299, J300, J301, J302, J303, J304, J305, J306, J307, J308, J309, J310, J311, J312, J313, J314, J315, J316, J317, J318, J319, J320, J321, J322, J323, J324, J325, J326, J327, J328, J329, J330, J331, J332, J333, J334, J335, J336, J337, J338, J339, J340, J341, J342, J343, J344, J345, J346, J347, J348, J349, J350, J351, J352, J353, J354, J355, J356, J357, J358, J359, J360, J361, J362, J363, J364, J365, J366, J367, J368, J369, J370, J371, J372, J373, J374, J375, J376, J377, J378, J379, J380, J381, J382, J383, J384, J385, J386, J387, J388, J389, J390, J391, J392, J393, J394, J395, J396, J397, J398, J399, J400, J401, J402, J403, J404, J405, J406, J407, J408, J409, J410, J411, J412, J413, J414, J415, J416, J417, J418, J419, J420, J421, J422, J423, J424, J425, J426, J427, J428, J429, J430, J431, J432, J433, J434, J435, J436, J437, J438, J439, J440, J441, J442, J443, J444, J445, J446, J447, J448, J449, J450, J451, J452, J453, J454, J455, J456, J457, J458, J459, J460, J461, J462, J463, J464, J465, J466, J467, J468, J469, J470, J471, J472, J473, J474, J475, J476, J477, J478, J479, J480, J481, J482, J483, J484, J485, J486, J487, J488, J489, J490, J491, J492, J493, J494, J495, J496, J497, J498, J499, J500, J501, J502, J503, J504, J505, J506, J507, J508, J509, J510, J511, J512, J513, J514, J515, J516, J517, J518, J519, J520, J521, J522, J523, J524, J525, J526, J527, J528, J529, J530, J531, J532, J533, J534, J535, J536, J537, J538, J539, J540, J541, J542, J543, J544, J545, J546, J547, J548, J549, J550, J551, J552, J553, J554, J555, J556, J557, J558, J559, J560, J561, J562, J563, J564, J565, J566, J567, J568, J569, J570, J571, J572, J573, J574, J575, J576, J577, J578, J579, J580, J581, J582, J583, J584, J585, J586, J587, J588, J589, J590, J591, J592, J593, J594, J595, J596, J597, J598, J599, J600, J601, J602, J603, J604, J605, J606, J607, J608, J609, J610, J611, J612, J613, J614, J615, J616, J617, J618, J619, J620, J621, J622, J623, J624, J625, J626, J627, J628, J629, J630, J631, J632, J633, J634, J635, J636, J637, J638, J639, J640, J641, J642, J643, J644, J645, J646, J647, J648, J649, J650, J651, J652, J653, J654, J655, J656, J657, J658, J659, J660, J661, J662, J663, J664, J665, J666, J667, J668, J669, J670, J671, J672, J673, J674, J675, J676, J677, J678, J679, J680, J681, J682, J683, J684, J685, J686, J687, J688, J689, J690, J691, J692, J693, J694, J695, J696, J697, J698, J699, J700, J701, J702, J703, J704, J705, J706, J707, J708, J709, J710, J711, J712, J713, J714, J715, J716, J717, J718, J719, J720, J721, J722, J723, J724, J725, J726, J727, J728, J729, J730, J731, J732, J733, J734, J735, J736, J737, J738, J739, J740, J741, J742, J743, J744, J745, J746, J747, J748, J749, J750, J751, J752, J753, J754, J755, J756,

TO IDENTICAL TERM. IN PLANT CONT.

TO GEN.

TO LOAD



1. OPERATE WITH NEGATIVE CHORD ONLY.

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE 6EN & CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

	D	REVISED WIRING ON T81	JV	8-3-70
	C	ADDED 33AS92 (WZ)	JV	8-3-
	B	TRIM WAS 301B7596	KG	
	A	ADDED REL.	JD	SV 5-8-70
	A	EDDED 32IP53 & 32I-100	JD	JV 4-15-70
		100-MS	SJL	6-11

UNITED STATES DEPARTMENT OF JUSTICE

2-16-70	WKR	Tim Van
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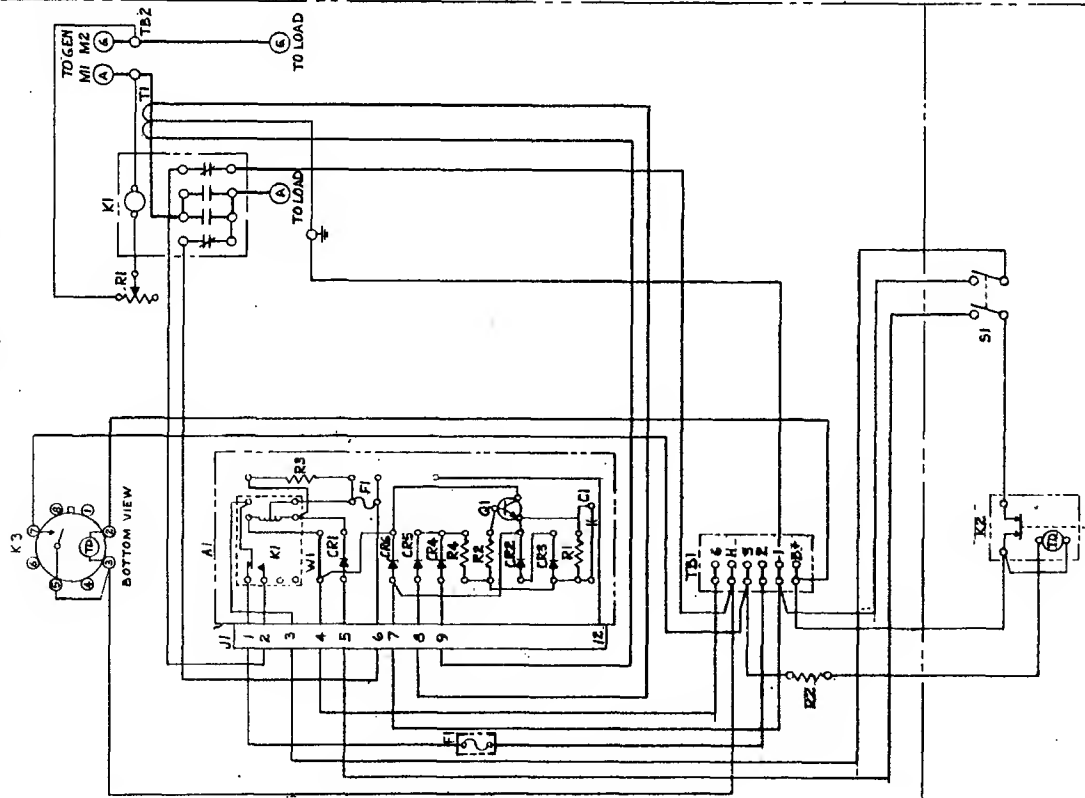
WIRING DIAGRAM

CONTROL - AUTO DEMAND

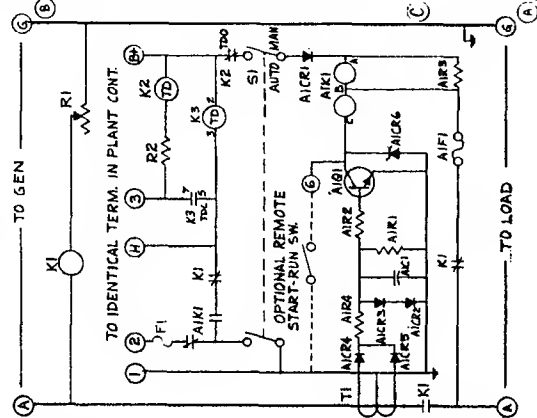
6176132

617C133

WIRING DIAGRAM
FRONT VIEW OF CHASSIS



SCHEMATIC



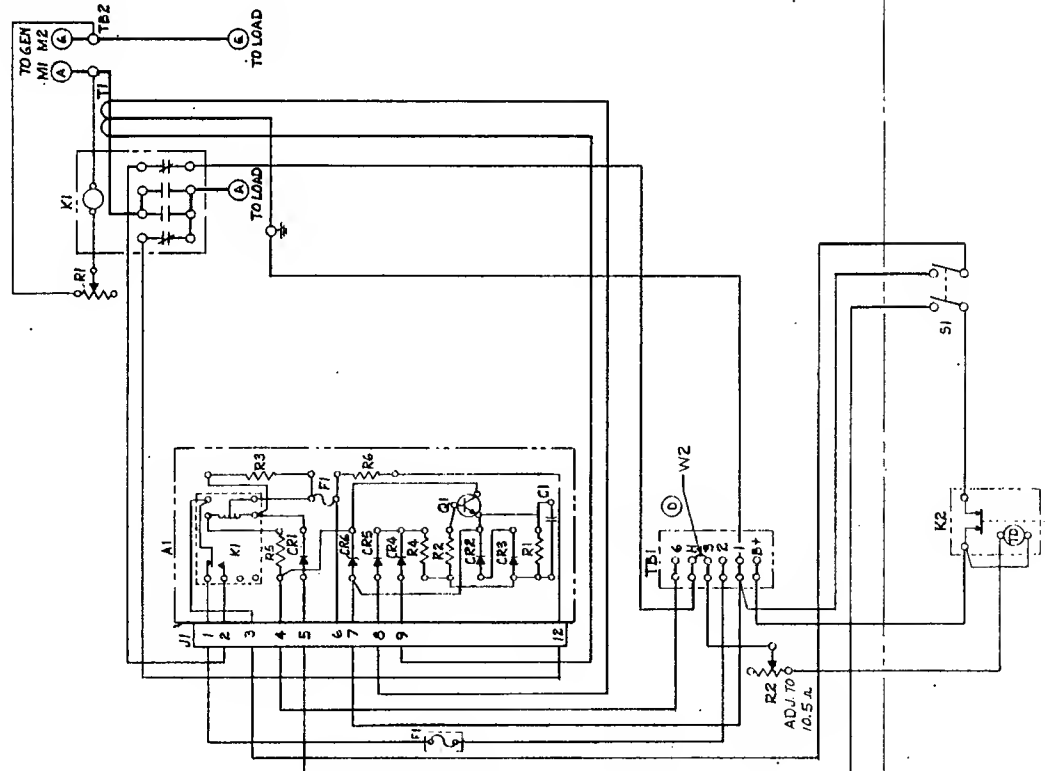
- NOTES:
1. OPERATE WITH NEGATIVE GROUND ONLY.
 2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

7.5HA-21/10C
7.5HA-21/12C

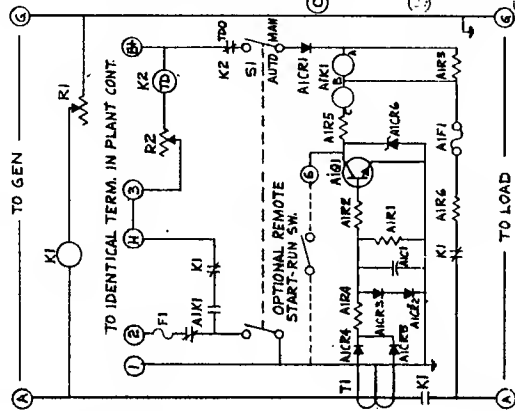
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45	10/1/70	WKR	CONTROL AUTO DEMAND
46	10/1/70	WKR	CONTROL AUTO DEMAND
47	10/1/70	WKR	CONTROL AUTO DEMAND
48	10/1/70	WKR	CONTROL AUTO DEMAND
49	10/1/70	WKR	CONTROL AUTO DEMAND
50	10/1/70	WKR	CONTROL AUTO DEMAND
51	10/1/70	WKR	CONTROL AUTO DEMAND
52	10/1/70	WKR	CONTROL AUTO DEMAND
53	10/1/70	WKR	CONTROL AUTO DEMAND
54	10/1/70	WKR	CONTROL AUTO DEMAND
55	10/1/70	WKR	CONTROL AUTO DEMAND
56	10/1/70	WKR	CONTROL AUTO DEMAND
57	10/1/70	WKR	CONTROL AUTO DEMAND
58	10/1/70	WKR	CONTROL AUTO DEMAND
59	10/1/70	WKR	CONTROL AUTO DEMAND
60	10/1/70	WKR	CONTROL AUTO DEMAND
61	10/1/70	WKR	CONTROL AUTO DEMAND
62	10/1/70	WKR	CONTROL AUTO DEMAND
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69	10/1/70	WKR	CONTROL AUTO DEMAND
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95	10/1/70	WKR	CONTROL AUTO DEMAND
96	10/1/70	WKR	CONTROL AUTO DEMAND
97	10/1/70	WKR	CONTROL AUTO DEMAND
98	10/1/70	WKR	CONTROL AUTO DEMAND
99	10/1/70	WKR	CONTROL AUTO DEMAND
100	10/1/70	WKR	CONTROL AUTO DEMAND

617C138

WIRING DIAGRAM
FRONT VIEW OF CHASSIS



SCHEMATIC



- NOTES:
1. OPERATE WITH NEGATIVE GROUND ONLY.
 2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

7.5HA-21-4/1C

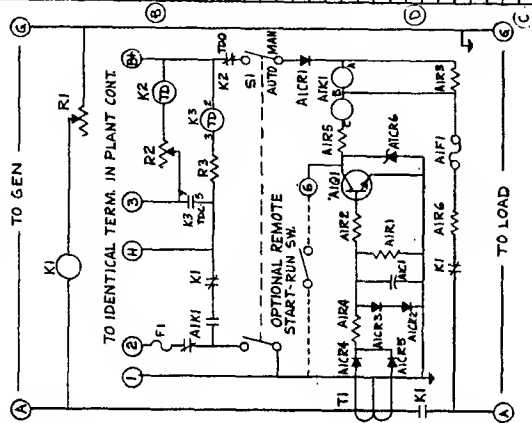
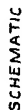
REF. DES.	PART NO.	QTY.	DESCRIPTION
A1	300B743	1	CONTROL-LOAD SENSOR
	301A3280	2	BRACKET-MOUNTING
	518A295	2	FASTENER-SNAP IN
K1	307C65	1	CONTACTOR
	332-142	2	TERMINAL
	307A685	2	JUMPER
	150A144	1	JUMPER
K2	320B104	1	RELAY-DRAINING LIMITER
R1	304A1579	1	RESISTOR ASSY
	304A282(REF)	1	RESISTOR-300 OHM .25 W
R2	304A222	1	RESISTOR-15 OHM .50 W
S1	30BP88	(REF)	SWITCH-AUTO MANUAL
T1	315A344	1	TRANSFORMER ASSY
	332A693(REF)	1	TERMINAL BLOCK
	332A840	1	MARKER STRIP
	332-142	2	TERMINAL-GROUND
W1	330G4 B	1	WIRING HARNESS
W2	332A592	1	JUMPER
	30103273	1	CONTROL BOX
	98C1815	1	SILKSCREEN
	98A2240	1	SILKSCREEN-SCHEMATIC
	30102293	1	TRIM
	518P231	1	FASTENER-TRIM
	98A866	1	NAMEPLATE-CONTROL
F1	321P153	1	FUSE-3 A/0P
	321-100(REF)	1	BLOCK-FUSE
			8131219

D	REVISED WIRING ON TBI	1	18-3-78
C	ADDED 332A592 (W2)	1	18-3-78
B	REV. 4-5 331B758	1	18-3-78
A	REV. 1-5 331B758	1	18-3-78
	ADDED TBI	1	18-3-78
	ADDED 321P153 & 321-100	1	18-3-78
	ADDED 321P153	1	18-3-78
	ADDED 321P153	1	18-3-78

ORIGIN	7.5HA-21-4/1C
WIRING DIAGRAM	CONTROL-AUTO DEMAND
120V	1PH
50/60 CY	

617C138

WIRING DIAGRAM
FRONT VIEW OF CHASSIS



REF. DES.	PART NO.	QTY.	DESCRIPTION
A1	3005143	1	CONTROL-OHA SENSOR
	3005145	1	BRACKET-MOUNTING
	518295	2	FASTENER-SHAP IN
K1	3070585	1	CONTRACTOR
	339-142	2	TERMINAL
	3070605	2	WIPPER
	1504144	1	WIPPER
M2	3200104	1	RELAY-CIRCUITS LIMITER
M3	3070579 (REF)	1	RELAY-TIME DELAY (30 SEC)
	5222577 (REF)	1	RELAY-TIME DELAY (5 SEC)
R1	3046719	1	SOCKET ASST
	3046719	1	SOCKET ASST
R2	3041321 (REF)	1	RESISTOR 40K OHM 25 W
	3041321	1	RESISTOR 15 OHM 50 W
S1	3009466 (REF)	1	SWITCH-AUTO MANUAL
	3054344	1	TRANSFORMER ASST
T01	3322693 (REF)	1	TERMINAL BLOCK
	3322440	1	WIPPER ST
T02	3322442	2	TERMINAL-GROUND
W1	3306346	1	WIRING HARNESS
F1	3310153	1	CONTROL BOX
	3310000 (REF)	1	SLASCREEN
	5001615	1	SLASCREEN
	5042240	1	SLASCREEN-SCHEMATIC
	30783259	1	TRIM
	5042257	3	FASTENER-TRIM
	5043869	1	NAMEPLATE-CONTROL
			FUSE, 5 AMP
			BLOCK - FUSE

NOTES:

1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

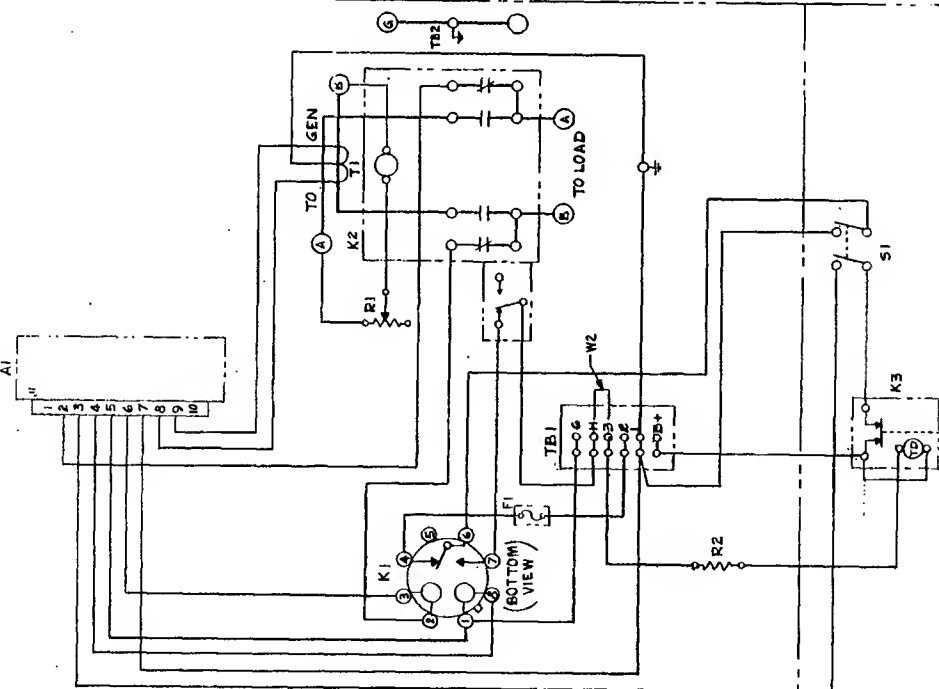
7.5HA-21-4/10C

7.5HA-21-4/12C

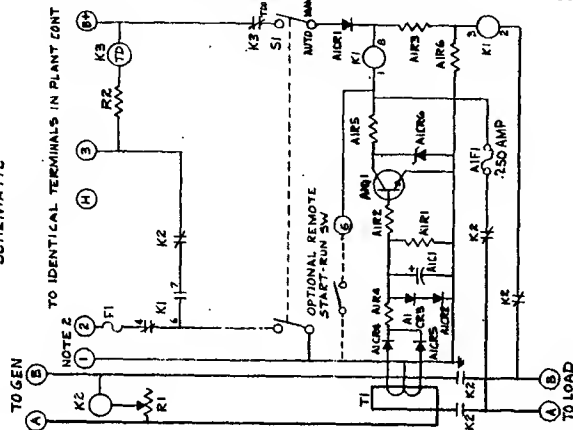
01	7.5 HA-21-4/10C	WIRING DIAGRAM	W/B
02	7.5 HA-21-4/12C	CONTROL AUTO DEMAND	W/B
24	120V 1PH		
24	2W 50/60 CY		

617C140

WIRING DIAGRAM
FRONT VIEW OF CHASSIS



SCHEMATIC



REF. DES.	PART NO.	QTY.	DESCRIPTION
A1	30B247	1	AMPLIFIER ASSY-LOAD SENSOR
	30B3280	2	BRACKET-MOUNTING
	518A255	2	FASTENER-SNAP IN
K1	307A858	1	RELAY-START RUN
K2	307C666	1	CONTACTOR
	18D-144	2	STRAP
	332-517	4	TERMINAL
	309A42	1	SWITCH-AUXILIARY
	309A193	1	INSULATOR
K3	320B104	1	RELAY-CRANKING LIMITER
	304A882	1	RESISTOR ASSY - 750 OHM 25W
R1	304A197 (REF)	1	RESISTOR-3 OHM 10W
R2	304A197 (REF)	1	RESISTOR-3 OHM 10W
S1	30B247 (REF)	1	SWITCH-AUTO MANUAL
T1	315A345	1	TRANSFORMER ASSY-CURRENT
TB1	332A688 (REF)	1	TERMINAL BLOCK
	332A840	1	MARKER STRIP
TB2	332-517	2	TERMINAL-GROUND
W1	330C552	1	WIRING HARNESS
W2	332A552	1	JUMPER
	301D3213	1	CONTROL BOX
	88C1815	1	SILSCREEN
	88A2252	1	SILSCREEN-SCHEMATIC
	301B293	1	TRIM
	518P217	3	FASTENER-TRIM
	88A866	1	NAMEPLATE-CONTROL
			0417C140
F1	321P153	1	FUSE-3 AMP
	321-100 (RED)	1	BLOCK-FUSE

7.5HA-23/1C

NOTES:

1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

12V CRANKING

3-12-70 WNR

7.5HA-23/1C

WIRING DIAGRAM

CONTROL-AUTO DEMAND

120/240V 1PH

3W 50/60 CY

Origin

3-12-70 WNR

7.5HA-23/1C

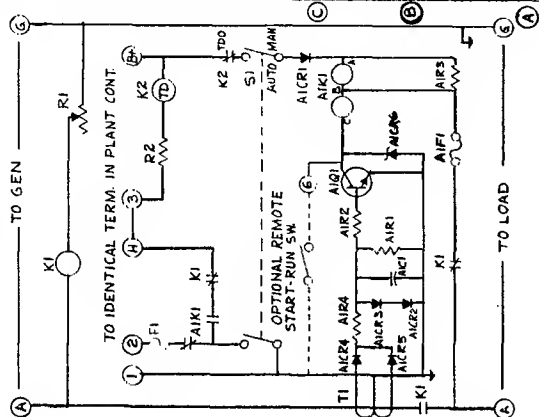
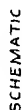
WIRING DIAGRAM

CONTROL-AUTO DEMAND

120/240V 1PH

3W 50/60 CY

617C140

[illegible]

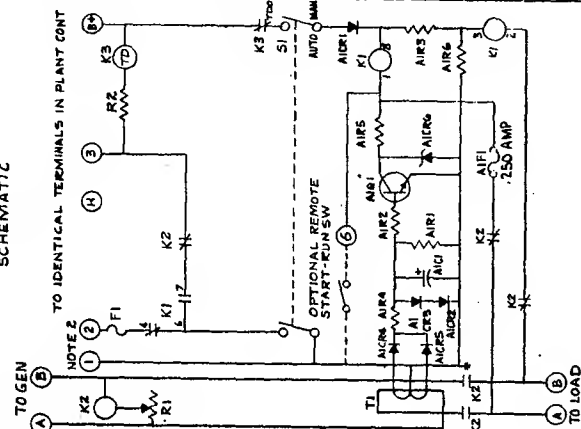
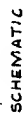
WATS:-

1. OPERATE WITH NEGATIVE GROUND ONLY
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO SEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD

15.0HA-22/1C

150H-22/1C 12V CRANKING	240V 1PH 50/60 CY 2W
150H-22/1C 12V CRANKING	240V 1PH 50/60 CY 2W

WIRING DIAGRAM FRONT VIEW OF CHASSIS



REF. DES.	PART NO.	QTY	DESCRIPTION
A1	3008747	1	AMPLIFIER ASSY-LOAD SENSOR
	3153130	2	BACKET-MOUNTING
	3184255	2	PARTICLE-SWAP IN
K1	3074555	1	RELAY-START RUN
K2	3076957	1	CONTACTOR
	160-144	2	STRAP
	3074542	2	BUS BAR
	332-142	4	TERMINAL
	309447	1	SWITCH-AUXILIARY
	3074659	1	INSULATOR
	3074685	4	JUMPER
K3	3208104	1	RELAY-DRAINING LIMITER
R1	3044652	1	RESISTOR ASSY-750 OHM .75 W
R2	3044192 (REF)	1	RESISTOR-3 OHM 10 W
S1	30BP88 (REF)	1	SWITCH-AUTO MANUAL
T1	3153436	1	TRANSFORMER ASSY-CURRENT
T81	3224659 (REF)	1	TERMINAL BLOCK
	3274940	1	WARKER STRIP
T82	332-142	2	TERMINAL-ROUND
W1	3386552	1	WIRING HARNESS
W2	3524592	1	JUMPER
	35103773	1	CONTROL BOX
	58C1815	1	SILKSCREEN
	98A252	1	SILKSCREEN-SCHWEMIC
	3018325	1	TRAY
	3107237	3	PLATE-TOOL
	99A960	1	NAMEPLATE-CONTROL
			617C143
F1	3219153	1	FUSE, 3 AMP
	321400 (REF)	1	BLOCK - FUSE

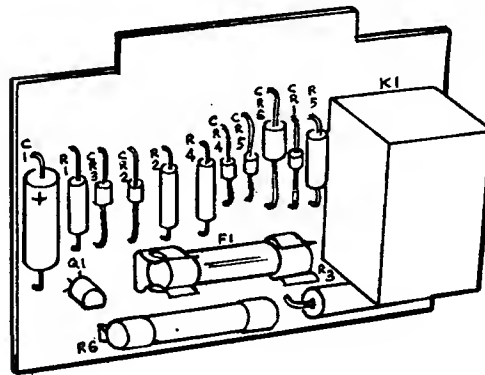
15.0HA-23/1C

NOTES:

1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

[illegible]

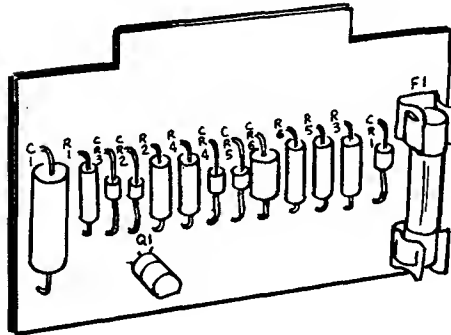
**300B740, 300B741 AND 300B743 PRINTED CIRCUIT BOARDS
(FOR 2-WIRE CONTROLS)**



COMPONENT	PART NUMBER		QTY. USED	DESCRIPTION
R1	350-540	(p.c. board 300B741)	1	Resistor, 2.2 K ohm
	350P548	(p.c. board 300B740, 300B743)	1	Resistor, 10 K ohm
R2	350-528		1	Resistor, 220 ohm
R3	352A111	(p.c. board 300B740, 300B743)	1	Resistor, 47 ohm
	352-119	(p.c. board 300B741)	1	Resistor, 100 ohm
R4	350-520		1	Resistor, 47 ohm
R5	350-538	(p.c. board 300B743 only)	1	Resistor, 1.5 K ohm
R6	352A156	(p.c. board 300B743 only)	1	Resistor, 150 ohm
C1	356A9		1	Capacitor, 10 mfd
CR1 - CR5	357A4		5	Diode, 400 MA
CR6	359A18	(p.c. board 300B743)	1	Diode, Zener
	359A29	(p.c. board 300B740, 300B741)	1	Diode, Zener
F1	321-168		1	Fuse, 1/4 ampere
K1	307A1087		1	Relay, Dual Coil
MP1	332B1299	(p.c. board 300B740, 300B741)	1	Board, Printed Circuit
	332B1304	(p.c. board 300B743)	1	Board, Printed Circuit
Q1	362A7	(p.c. board 300B740, 300B741)	1	Transistor, Signal
	362A14	(p.c. board 300B743)	1	Transistor, Signal
	321P163		2	Clip, Fuse

NOTE: Components R5 and R6 on p.c. board 300B743 only.

**300B747 PRINTED CIRCUIT BOARD
(FOR 3-WIRE CONTROLS)**



COMPONENT	PART NUMBER	QTY. USED	DESCRIPTION
R1	350-540	1	Resistor, 2.2 K ohm
R2	350-528	1	Resistor, 220 ohm
R3	350-528	1	Resistor, 220 ohm
R4	350-520	1	Resistor, 47 ohm
R5	350-524	1	Resistor, 100 ohm
R6	350-528	1	Resistor, 220 ohm
C1	356A9	1	Capacitor, 10 mfd
CR1 - CR5	357A4	5	Diode, 400 MA
CR6	359A29	1	Diode, Zener
F1	321-168	1	Fuse, 1/4 ampere
MP1	332B1308	1	Board, Printed Circuit
Q1	362A7	1	Transistor, Signal
	321P163	2	Clip, Fuse